MUSIC

in the Age of Confucius

MUSIC *in the Age of Confucius*

CHINESE ARCHAEOLOGISTS digging in central China in 1977 unexpectedly uncovered two of the earliest and most extensive surviving groups of musical instruments in the entire ancient world, dating from nearly two thousand five hundred years ago. Since these percussion, string, and wind instruments were in near-pristine condition — some still playable, others inscribed with musicological information — they provided hitherto unimagined possibilities for the study of music and the history of musical instruments in ancient China.

Presented here are the insights of six specialists who describe these instruments' sophisticated tuning systems, techniques of manufacture, and inscriptions revealing their musical and nonmusical significance in ancient Chinese society. It has become apparent that different types of music coexisted in Bronze Age China (2000–500 B.C.) for state rituals as well as for private entertainment. The authors place this evidence in the context of recent archaeological discoveries and reassess it in light of classical history and literature on Chinese music. The three main families of instruments are also examined in detail in individual chapters.

Lovers of art and music, as well as enthusiasts of archaeology, musicology, and cultural history, will find this a compelling and readable presentation of the latest research and ideas on one of the world's oldest and most profound artistic expressions. ≈

Music in the Age of Confucius

EDITED BY **Jenny F. So**

MUSIC

in the Age of Confucius

Published by the

Freer Gallery of Art and **Arthur M. Sackler Gallery**

Smithsonian Institution, Washington, D.C.

Distributed by the

University of Washington Press, Seattle and London

Freer Gallery of Art

M1
.M87
2000

Copyright © 2000 by Smithsonian Institution
All rights reserved.

Published by the Freer Gallery of Art and
Arthur M. Sackler Gallery,
Smithsonian Institution, Washington, D.C.
Distributed by the University of Washington
Press, Seattle and London

The publication of this book is supported by a major grant from the E. Rhodes and Leona B. Carpenter Foundation. It is published on the occasion of the exhibition *Music in the Age of Confucius,* which is made possible by generous grants from two anonymous donors and the New York Community Trust — The Island Fund, with major in-kind support from Federal Express. Important additional support is provided by H. Christopher Luce and Tina Liu, the Jennie Zoline Foundation, the Feinberg Foundation, the Smithsonian Educational Outreach Fund, Robert C. Tang, and the Ellen Bayard Weedon Foundation.

Significant funds for this project have been made available through the Smithsonian Institution, the Else Sackler Public Affairs Endowment, the Education Endowment Fund, and the Chinese Art Research Fund. This exhibition is supported by an indemnity from the Federal Council on the Arts and the Humanities.

Editor: Bruce Elliot Tapper
Designer: Carol Beehler
Typeset in Adobe Minon by General
Typographers, Inc., Washington, D.C.
Printed in Singapore by CS Graphics

Cover: one of the bells from Tomb 2 at Leigudun, Suizhou, Hubei Province, China. (See Checklist no. 2, Bell no. 93.) Photograph by Hao Qinjian.

Frontispiece: one of the bells from the second tier of the set of sixty-five bells from the tomb of Marquis Yi of Zeng (see fig. 2.1). Photograph by John Tsantes.

Library of Congress
Cataloging-in-Publication Data
Music in the Age of Confucius / edited by Jenny F. So.
p. cm.
Includes bibliographical references (p.) and index.
ISBN 0-295-97953-4
1. Music — China — To 500 — History and criticism.
2. Music archaeology — China.
I. So, Jenny F.
ML336.2 .M87 2000
780'.951'0901 — DC21
99-056011
CIP

The paper used in this publication meets the minimum requirements for the American National Standard for Permanence of Paper for Printed Library Materials, Z39.48–1984.

Smithsonian
Freer Gallery of Art and
Arthur M. Sackler Gallery

Contents

Foreword 7
Milo Cleveland Beach

Acknowledgments 10

ONE | Music in Late Bronze Age China 13
John S. Major and Jenny F. So

TWO | Percussion 35
Robert Bagley

THREE | Strings 65
Bo Lawergren

FOUR | Winds 87
Feng Guangsheng

FIVE | The Zeng Hou Yi Finds in the History of Chinese Music 101
Lothar von Falkenhausen

Chronology and Map 114

Checklist 117

Glossary of Chinese Characters 138

References 142

Contributors 148

Index 150

Foreword

MILO CLEVELAND BEACH
Director, Freer Gallery of Art and Arthur M. Sackler Gallery

The discovery in 1977 of the undisturbed tomb of Marquis Yi of Zeng (Zeng Hou Yi) is one of the greatest archaeological finds in recent Chinese history. The tomb housed the bodies of a nobleman, laid out within an elaborately decorated coffin; twenty-one women, each of whom had been strangled; and a dog. The burial also included almost ten and a half tons of bronze ritual vessels, weapons, and other fabricated items — an astonishing statistic, especially when one remembers that this is not an imperial tomb. Even more uniquely, however, two of the four burial chambers were filled with musical instruments: the central room contained all the instruments for a ceremonial ensemble, while a room to the east, where the marquis himself was found, housed an eight-instrument chamber group intended for private entertainment. Those instruments, which can be dated to about 433 B.C. and earlier, formed the oldest musical ensembles surviving from any culture. They are the central focus of the research published in this book, which accompanies an exhibition at the Arthur M. Sackler Gallery.

The discovery of the Marquis Yi of Zeng burial in 1977 immediately followed the end of the Cultural Revolution, a decade-long period defined by Chairman Mao's directive to attack the "Four Olds," which included "Old Customs" and "Old Cultures." During this period, when museums and libraries were sacked and universities, music schools, and art academies closed, many young students from urban centers were exiled to the countryside to remove them from the influence of bourgeois and elitist cultural standards. Sent to work with peasants and farmers, several inventively used their time to learn about the people with whom they lived. Among other activities, some documented village folk tunes, while others formed village bands — in one case using farm implements and cooking pots as the only available instruments.

With the end of the Cultural Revolution, a few of these young people were so affected by their experiences that they determined to enter music conservatories and art academies, and the most talented now form an exciting new generation of creative artists. For musicians, the Marquis Yi of Zeng find, discovered exactly at this time of renewed contact with and respect for traditional music in China, has provided further inspiration. While too little is known of the actual music performed in this early period, these instruments and the information they provide nonetheless have revealed the historical root-system of a distinctively Chinese music. Whereas an earlier generation of composers in China had emulated Western music practices as their ideal, Marquis Yi's tomb confirmed the respect that younger musicians instinctively felt for Chinese tradition. Few archaeological finds have had so immediate an effect beyond the world of archaeologists and historians. Today, composers of Chinese background are among the most vital contributors to the international world of contemporary music.

The Arthur M. Sackler Gallery and Freer Gallery of Art at the Smithsonian Institution in Washington, D.C., together form the national museum of Asian art for the United States. Since ancient Chinese art is a particular strength of the museum's collections and exhibitions, and because research in Chinese art and archaeology is a continuing commitment of the museum, it is a great honor for the Sackler to present the instruments found in the Zeng tombs together to the American public for the first time. The project draws on the Sackler Gallery's international symposia, *New Perspectives on Chu Culture during the Eastern Zhou Period* (1991) and *Bells of Bronze Age China* (1997), as well as the continuing presentation in the museum's public programs of both traditional music of China and works by contemporary composers.

Discussions about this exhibition were initiated in Beijing and Wuhan in 1988 by Kenneth J. DeWoskin, professor at the University of Michigan, and myself. The Sackler Gallery is especially indebted to Sun Jiazheng, minister of culture for the People's Republic of China; Zhang Wenbin, director, National Administration for Cultural Heritage, and Wang Limei, deputy-director; Chen Zhongxing, director of the Hubei Provincial Museum, Wuhan, and his predecessor Shu Zhimei; the Honorable James R. Sasser, former United States ambassador to the People's Republic of China; and to His Excellency Li Zhaoxing, the Chinese ambassador to the United States. Without their strong support and help neither this book nor the exhibition would have been possible.

Every aspect of *Music in the Age of Confucius* has been ably directed by Jenny F. So, curator of ancient Chinese art for the Freer Gallery of Art and Arthur M. Sackler Gallery. We are grateful also to the scholars who have contributed important new research to this book: Feng Guangsheng, Robert Bagley, Lothar von Falkenhausen, Bo Lawergren, and John S. Major, as well as Dr. So, who also served as the book's editor.

Preceding page: detail of bronze fitting and support on the middle tier of the set of sixty-five bells from the tomb of Marquis Yi of Zeng. Photograph by John Tsantes.

This project has been a major undertaking for the galleries, which would not have been successful without the enthusiasm shown by the Visiting Committees of the Freer and Sackler Galleries. We acknowledge in particular the efforts of Nancy Fessenden and Michael Sonnenreich in securing funding for this exhibition. A grant from the New York Community Trust — The Island Fund, made possible by Elizabeth Meyer, was also instrumental to this project, and we deeply appreciate the financial support of Visiting Committee members H. Christopher Luce, Frank H. Pearl, George Fan, Robert S. Feinberg, Robert C. Tang, Marie Lam, Cynthia Helms, Kenneth X. Robbins, and Shelby White.

We are delighted by the participation of Federal Express in this project and thank the corporation for its major in-kind support. We are also grateful to the Smithsonian Educational Outreach Fund, the Ellen Bayard Weedon Foundation, the Marpat Foundation, and the Sylvia and Alexander Hassan Family Foundation and its president, Lois Raphling, for their grants. The backing of central Smithsonian administration was crucial, and significant funds were made available by the Smithsonian for this project, for which we would like to extend our appreciation to former Secretary I. Michael Heyman and Provost Dennis O'Connor. Finally we are particularly grateful to the E. Rhodes and Leona B. Carpenter Foundation for its generous grant toward the production of this book.

Acknowledgments

JENNY F. SO
Curator, Ancient Chinese Art

THE IDEA for an exhibition of the musical instruments recovered from the tomb of Marquis Yi of Zeng (Zeng Hou Yi) originated with Milo C. Beach, director of the Freer Gallery of Art and Arthur M. Sackler Gallery, Smithsonian Institution, before I joined the museum in 1990. Since we shared an interest in things musical, I am particularly pleased to see this idea materialize ten years later into both a unique exhibition and a collection of essays that serves to explain this extraordinary find to the Western world.

Throughout this period, the project has received the wholehearted support of successive directors of the Hubei Provincial Museum — Tan Weisi, Shu Zhimei, and Chen Zhongxing — and directors of the Culture Department, Hubei Province — Hu Meizhou and Shen Haining — who were gracious and welcoming hosts when Dr. Beach and I visited Wuhan on various occasions. During the last planning stages, Vice-Director Feng Guangsheng became our key contact and liaison. When I and several members of the gallery's staff visited the museum in July 1999 to prepare for the exhibition, Vice-Director Feng personally made sure our needs were met and orchestrated our activities. In addition, many staff members of the Hubei Provincial Museum contributed to the success of our trip, especially Hao Qinjian, who generously allowed the use of his studio space and equipment (and provided the many beautiful photographs that appear in this volume); Zhang Xiang, who organized the audio-video taping sessions that supplied material for the exhibition's audioguide; and Liu Lin, who patiently supplied much-needed interpreting. To these and other members of the staff of the Hubei Provincial Museum, I owe profound thanks.

I am also grateful for the staunch support of the cultural agencies of the People's Republic of China in Beijing: Minister Sun Jiazheng, Ministry of Culture; Director Zhang Wenbin, National Administration for Cultural

Heritage, especially Deputy-Director Wang Limei, Foreign Affairs Office, who listened to our requests with patience and understanding and did her best to smooth the way toward the completion of this project.

This publication is the result of the joint efforts of many members of the museum's staff. I would especially like to thank John Tsantes for laboring under heated lights in hot and humid Wuhan to give us many of the wonderful images reproduced in this book; Li Xiating of the Shanxi Institute of Archaeology and a Smithsonian Institution Senior Fellow, for drafting several of the drawings and maps; Lily Kecskes and the library staff for able research and bibliographical assistance; Weina Tray, curatorial assistant, for preparing the glossary of Chinese characters; Karen Sagstetter, editor-in-chief, and the publications department: Bruce Elliot Tapper for editing; Ann Hofstra Grogg and Michelle Smith for proofreading and indexing; and Carol Beehler, art director for publications, for turning the complex text and illustrations into a beautiful book. Above all, I must thank the authors — Feng Guangsheng, Robert Bagley, Lothar von Falkenhausen, Bo Lawergren, and John S. Major — who contributed their insights and scholarship to make this a groundbreaking study of the history of early Chinese music. All errors that appear in the final publication are, of course, my responsibility.

ONE | Music in Late Bronze Age China

JOHN S. MAJOR *and* JENNY F. SO

THROUGHOUT CHINESE history, musicians and connoisseurs of music have looked to the past for inspiration, confident that music was held in high regard in antiquity. Remarks emphasizing the significance of music appear in the works of virtually all of the major thinkers of early China,[1] so that its importance in early Chinese culture has always been taken for granted. It is ironic, then, that over the centuries reliable information about the nature and character — to say nothing of the actual sound — of ancient Chinese music gradually disappeared. For lack of a system of written notation, knowledge of how to perform ancient music vanished; instruments fell into disuse or evolved into new forms; and terms used to describe music sometimes acquired new meanings or could no longer be clearly understood. Texts that might have preserved the salient elements of ancient musical theory and practice were lost and not transmitted to posterity. For example, what may have been a key ancient work — the *Yue Jing* (Classic of music) — has been lost for some fifteen centuries. While tradition continued to affirm the importance of music in ancient China, its precise nature was left increasingly to the imagination.

In recent decades this loss of information has been reversed to some extent, so that it is now possible to describe the music of China during the Bronze Age (2000–500 B.C.) with some confidence. This is due in large part to archaeological work that has brought to light a great deal of material bearing on ancient Chinese music. There are representations of ancient musical performances in wall and lacquer paintings, inscribed on brick and stone (see figs. 3.6.4–6; 3.8.5; 3.10.4–6), and modeled in the round in pottery, wood, and bronze (see figs. 1.6, 1.11, 5.1). Actual musical instruments, especially chime stones (or lithophones) and bronze bells, have been recovered from a number of tombs. Some of these, in turn, bear inscriptions that have yielded much

Preceding page: detail, fig. 1.3

Fig. 1.1 Aerial view of the tomb of Marquis Yi of Zeng (Zeng Hou Yi) at Leigudun, Suizhou, Hubei Province, just before opening in spring 1978. Hubei Provincial Museum. Photograph by Pan Bingyuan.

information about the theory and practice of music in ancient China. Of all the archaeological sources for early Chinese music, the tomb of Marquis Yi of the state of Zeng (ca. 433 B.C.) is overwhelmingly the most important.

THE DISCOVERY

In the winter of 1977, a unit of the People's Liberation Army, sent to level a low hill for a factory site at Leigudun in the town of Suizhou, about 155 kilometers north of Wuhan in Hubei Province (see map on page 115), discovered a large, stone-lined burial pit dug into the hill. Trained archaeologists were called in. After extensive excavation, they uncovered an irregularly shaped pit about 220 square meters in area, completely roofed with massive timbers (fig. 1.1). By May 1978, the entire tomb was exposed (fig. 1.2).[2]

The layout and contents of the four chambers of the tomb suggested an underground palace. The northern chamber, filled with more than four thousand bronze items — including weapons, armor, and chariot fittings — was the armory. The large central chamber, equivalent to a ceremonial courtyard or hall, held nearly 130 bronze ritual vessels and most of the musical instruments (fig. 1.3). The eastern chamber, regarded as the residential quarters of the palace, contained the lacquered double wooden coffins of the tomb's occupant (fig. 1.4), a middle-aged man, together with eight smaller coffins containing the remains of eight young women who accompanied him in death. Thirteen more women were buried in the western chamber, which perhaps represented the women's quarters of the palace. These twenty-one women probably included

Fig. 1.2 Aerial view of opened tomb revealing four separate chambers. The central chamber contained most of the musical instruments and ritual vessels. Marquis Yi's outer coffin is visible lying on its side in the eastern chamber. Coffins for thirteen female attendants are scattered about the western chamber. Hubei Provincial Museum. Photograph by Pan Bingyuan.

Fig. 1.3 Excavators with bells *in situ* in the central chamber of the tomb of Marquis Yi of Zeng. The chimestone rack can be seen toward the far end of the compartment, parallel to the short arm of the bell stand. The largest drum, lying on its side, is partly visible at the bottom right edge of the photograph. Hubei Provincial Museum. Photograph by Pan Bingyuan.

Fig. 1.4 Inner of two nested coffins (with detail of design) from the eastern chamber of the tomb of Marquis Yi of Zeng, Leigudun, Suizhou, Hubei Province. Fifth century B.C. Lacquered wood. Height 132 cm, width 125–27 cm, depth 250 cm. Hubei Provincial Museum. Photograph by Hao Qinjian. (See also Checklist no. 1.)

favorite consorts, musicians, dancers, and attendants to serve their master in his afterlife.

The occupant of the tomb has been identified through the inscription that appears on many of the tomb's bronzes as Zeng Hou Yi, or Marquis Yi of Zeng. This identification is confirmed by an inscription on one of the bells in the central chamber, which states that it was a gift presented in 433 B.C. to Marquis Yi of Zeng by the king of Chu, a powerful neighboring state to which Zeng was subordinate (see fig. 2.4). The tomb can therefore be dated to 433 B.C. or soon after, its occupant the ruler of a small state in the Yangzi (Yangtze) valley during the fifth century B.C.

Three years later in 1981, about one hundred meters west of the marquis's burial, a second tomb was discovered belonging to his consort or a descendant from a generation or so later.[3] The second tomb yielded a similar but slightly smaller chime of thirty-six bronze bells in graduated sizes, preserved in less ideal condition, with no evidence that they were buried with a rack, and only a few surviving bronze mounts (fig. 1.5; see fig. 2.25). Drums and chime stones, also much degraded, accompanied the thirty-six bells. These two sets of bells form the two largest, most complete, and best preserved chimes of ancient Chinese musical bells known.

Fig. 1.5 View of Tomb 2 at Leigudun, Suizhou, Hubei Province. The bells were placed on the tomb floor rather than displayed on a rack as in Marquis Yi's tomb. Twenty-nine were laid on their sides in two rows near the south wall; the remaining seven were grouped next to the west wall. A bronze base for what appears to be a pole drum lies next to the seven bells. Reconstruction of the stand (see fig. 2.25) was based partly on the locations of the bells *in situ*. Only twenty-two suspension devices for the bells were found in the tomb. Photograph by Hao Qinjian.

To discover an intact and dated tomb furnished with the riches of its time is every archaeologist's dream. But the two Zeng burials are outstanding even within such a dream because of their unique treasure of musical instruments. From Marquis Yi's tomb alone, two entirely different musical ensembles were recovered in nearly pristine condition: a large ceremonial or court ensemble, including a chime of sixty-five bells and a set of thirty-two chime stones in the tomb's central chamber, and an eight-instrument chamber ensemble placed near the marquis's coffin in the "residential" eastern chamber. Although smaller in number and less spectacularly preserved, the instruments from the second tomb confirm that the marquis's ensemble is not an archaeological accident or anomaly. The marquis's sixty-five bells form the largest assemblage known in China and have been much discussed by Chinese and Western scholars for their importance as indicators of bronze-casting technology in the fifth century B.C.; of Chu artistic influence along the Yangzi River Valley; as the supreme achievements in two-toned bell technology; and, with the inscriptions on the bells and stone chimes, as the most complete written record of early Chinese musical systems (see Chapter 2).[4] Together the two ensembles form the largest group of ancient musical instruments known, not just in China but in the entire ancient world. There is nothing like it from other ancient cultures in Mesopotamia, Egypt, India, Greece, Rome, or Mesoamerica.

THE COURT ENSEMBLE

The centerpiece of the court ensemble is the chime of sixty-five bells in graduated sizes hung on a three-tiered, L-shaped lacquered wooden rack, nearly eleven meters long and more than two and a half meters high (see fig. 2.1). A large drum supported by a wooden pole is placed at the end of the short arm of the rack (see Checklist no. 5). Facing it, completing a U-shape, is a bronze stand for thirty-two chime stones (see figs. 1.3, 2.22). This U-shaped array, bounded by percussion instruments on three sides — bells, chime stones, a pole drum, and two smaller drums (see Checklist no. 6) — surrounds stringed instruments. There were seven twenty-five-stringed *se*-zithers (see figs. 3.2, 3.3) in the center, with eight wind instruments — four mouth organs (see fig. 4.3), two panpipes (see fig. 4.2), and two transverse flutes (see fig. 4.1a, b) — relegated to the sides. The number of wooden hammers and posts recovered with the bells suggests that five musicians played the bells (see Chapter 2). String and wind musicians might be seated on the floor in front, as suggested by a group of wooden funerary figures from a tomb at Mawangdui in Changsha, Hunan Province, of the early second century B.C. (fig. 1.6). A total of twenty-four musicians would be required if all the instruments were played at the same time.

The marquis's arrangement is visually impressive, with the tall bell rack,

Fig. 1.6 Group of wooden funerary figures of musicians from Tomb 1 at Mawangdui, Changsha, Hunan Province. Early second century B.C. Heights of figures 32.5–38.0 cm. After Hunan sheng bowuguan 1973: pl. 203.

the pole drum, and the chime-stone rack forming a monumental backdrop to the stringed and wind instruments played at floor level in front. This layout is probably also effective acoustically, with the softer sounds of the strings and winds nearer the audience, and the louder percussion sounds farther away. The more than five-octave range of the bells and chime stones suggests that they may have sounded the melody in unison with the strings and winds, if and when they were played together, while the drums carried the rhythm. Some of the music that the marquis's grand ensemble played might be similar to that mentioned in the *Shi Jing* (Classic of poetry), a compilation of poems, folk songs, and ritual hymns from the first five hundred or so years of the Zhou dynasty (1050–221 B.C.):

> They strike the bells, *kin, kin,*
> They play the *se*-zither, play the *qin*-zither,
> The mouth organ and chime stones sound together;
> They sing the *Ya* and *Nan* Odes,
> And perform flawlessly upon their flutes.
> (Ode 208, *Gu Zhong*)[5]

Other times, the ensemble may have played music for more boisterous revels, suggested by a passage in the *Chu Ci* (Elegies of Chu), written in the fourth or third century B.C.:

> Before the dainties have left the tables,
> Girl musicians take up their places.
> They set up the bells and fasten the drums
> And sing the latest songs: . . .

Fig. 1.7 Detail of a design on a bronze *hu*, ritual wine vessel, from Baihuatan, Chengdu, Sichuan Province. Fifth century B.C. Drawing by Li Xiating after *Wenwu* 1976: pl. 2.

Bells clash in their swaying frames;
The catalpa-wood zithers' strings are swept. . . .
Pipes and zithers rise in wild harmonies,
The sounding drums thunderously roll;
And the courts of the palace quake and tremble
As they throw themselves into the Whirling Chu.
Then they sing songs of Wu and ballads of Cai
And play the Dalü music.
Men and women now sit together,
Mingling freely without distinction;
Hat-strings and fastenings come untied:
The revel turns to wild disorder.
(*Chu Ci, Zhao Hun*, 1: 106–23)[6]

Stylized pictorial motifs on bronze vessels of the period show bells, chime stones, pole drum, panpipes, and mouth organs — though no strings — performing in a grand architectural setting presumably similar to the marquis's ceremonial hall (fig. 1.7). The studied grace of this scene gives no hint of the bacchanalian abandon described in the Chu poem, a mood better suggested by the scenes painted on the duck-shaped box buried with the marquis (fig. 1.8).

By their sheer numbers, size, appearance, and sound, percussion instruments clearly dominated the court ensemble. This is consistent with what we have already known about ancient Chinese musical instruments: percussive instruments have a long history going back to the late Neolithic period in China (ca. 5000–2000 B.C.; see Chapter 5), and sets of bronze bells, though much smaller in number, had been produced by the late second millennium B.C. (see Chapter 2). Although ancient texts like the ones above suggest that stringed instruments may have existed in antiquity as solo instruments or in ensemble playing,[7] the marquis's ensemble presents the earliest surviving evidence of their use in court ensemble music.

detail a

detail b

Fig. 1.8 Duck-shaped box with details of two music-making scenes, from the western chamber of the tomb of Marquis Yi of Zeng, Leigudun, Suizhou, Hubei Province. Fifth century B.C. Lacquered wood. Height 16.5 cm, width 12.5 cm, length 20.1 cm. Hubei Provincial Museum. Photograph by Hao Qinjian. (See also Checklist no. 7.)

THE CHAMBER ENSEMBLE

The marquis's much smaller chamber ensemble seems to present a very different picture. The chamber ensemble, made up of just eight instruments buried with the marquis and eight young female attendants in the residential quarters of his tomb, is dominated by strings. There are no bells, just two mouth organs and one small, tambourinelike drum supported between the antlers of a fabulous, one-and-a-half-meter-tall bird (see Checklist no. 16). The key sounds came from stringed instruments — three twenty-five-stringed *se* like the ones in the court ensemble (see figs. 3.2, 3.3),[8] one ten-stringed instrument identified as a type of *qin* (see figs. 3.4a, b), and one five-stringed *zhu*-zither (see fig. 3.5). This string-dominated ensemble would have provided intimate chamber music that entertained the marquis in a more private setting.

The *se* and *zhu* instruments are highly decorated in multicolored lacquer in characteristic Chu style, with intricately intertwined pictorial motifs among

Fig. 1.9 Design of constellations on a lacquered wooden garment box from the tomb of Marquis Yi of Zeng, Leigudun, Suizhou, Hubei Province. Fifth century B.C. Hubei Provincial Museum.

which snakes (or dragons) and long-tailed birds are prominent (see fig. 1.4). The juxtaposition of birds and snakes is common in Chu iconography. The motif is almost certainly an early manifestation of the concept of complementary pairing (*yang-yin,* heaven-earth, south-north, bright-dark, hot-cold, male-female, and so on) that later played such a prominent role in Chinese philosophy. That the state of Zeng in the fifth century B.C. was already conversant with this kind of correlative-cosmological thinking is shown by the design on the cover of a lacquered wooden garment box from the marquis's tomb (fig. 1.9), showing the Green Dragon of the East, the White Tiger of the West, the Northern (Big) Dipper, and the names of the twenty-eight Lunar Lodges (constellations).

The most striking instrument in the chamber ensemble, however, is the ten-stringed instrument (see figs. 3.4a, b). It is generally considered to be the earliest surviving ancestor of the much-admired seven-stringed *qin* (zither) of Han, Tang, and intervening periods (206 B.C.–A.D. 907). Both visually and musically, this *qin* stands out among the marquis's instruments. It is simple, almost austere in appearance, being covered entirely with black lacquer like its descendant, without the intricate carving and multicolored decorations of the other instruments. This suggests an origin outside the milieu of Chu culture (see pp. 30–32).[9] As a musical instrument, the *qin* is not nearly as powerful sounding as the *se.* Its system for fine-tuning—by tightening the silk strings wound around tuning pegs instead of using movable bridges—required the use of an additional accessory, a tuning key, which suggests foreign connections (see Chapter 3).

MUSIC IN LATE BRONZE AGE THOUGHT AND SOCIETY

Fifth – Third Century B.C.

Early Chinese thinkers viewed music as a crucial aspect of culture, and they wrote about it with attention to its moral value and its role in a larger cosmological understanding of the world around them. From these writings we can learn much about the importance of music in ancient China and in particular about the quite different cultural messages implied by the marquis's two musical ensembles.

In the view of most early Chinese philosophers, music was a manifestation of virtue and one of the pillars of a properly ordered society. This idea appears prominently in writings traditionally attributed to Confucius (Kongzi; ca. 551–479 B.C.): "The Master said, 'If a man lack benevolence, what has he to do with the rites? If a man lack benevolence, what has he to do with music?'" (*Analects* 3). "Yan Yuan asked about ruling a state. The Master said, 'Follow the Xia calendar, ride a Yin carriage, wear Zhou ceremonial headgear. For music, use the Shao and the Wu. Get rid of the tunes of Zheng, and keep glib people at a distance. The tunes of Zheng are lascivious, and glib people are dangerous'" (*Analects* 15).

The role of music is elaborated in later works in the Confucian tradition. In the writings of Confucius's most famous pupil, Mencius (Mengzi, ca. 371–289 B.C.), the disciple Zigong says: "By seeing the rites of a ruler, we may know the character of his government. By hearing his music, we may know the character of his virtue" (*Mencius* II.1.ii.27). And the *Yue Ji* (Record of music, Chapter 27 of the *Li Ji,* or Record of rites; ca. third–second century B.C.) says: "Therefore the early kings, when they instituted rites and music, did not do so to gain full satisfaction for the desires of the mouth, stomach, ears and eyes. But they intended to teach the people to regulate their likes and dislikes, and to turn them back to the normal course of humanity. . . . Therefore the early kings instituted rites and music to regulate human conduct."[10]

Describing the efficacy of both rites and music, the chapter continues:

> The rites regulate people's minds. Music unifies their sounds. Government serves to carry this out, and punishments serve to guard against its violation. Rites, music, punishments and government: when these four have full play without irregularity or conflict, the Kingly Way is complete. . . . It is the business of [music and rites] to attune people's feelings and give elegance to their outward manifestations. . . . Music comes from within; rites act from without. Coming from within, music produces the serenity [of the mind]. Acting from without, rites produce the finished elegance [of manner]. Great music must be easy. Great rites must be simple. Let music achieve its full results, and there will be no resentments. Let rites achieve their full results, and there will be no contentions. The reason why bowings and courtesies could set the world in order is that there are music and rites.[11]

It is significant in this passage that the rites are treated as inseparable from music — without music and dance there were no rites, properly speaking. This reveals a key concept in Chinese philosophy and musical performance: that one of the sources of music's power is its capacity to unite (*he*) the feelings and movements of large numbers of people through dance, song, military drill, or other activities based on melody and rhythm. Music and rites, in their power to unite people's efforts in approved ways, were thus seen as manifestations of benevolence and righteousness, and as such, essential to good government.

The *Guanzi,* a work (named after its supposed author) from the fourth century B.C. not particularly Confucian in its sympathies, recounts an incident that elaborates on the connection between music and good government. It tells how Duke Huan of Qi was admiring his bell chime in the company of his minister Guan Zhong and commented on how pleasing the bells sounded. Guan Zhong responded that music was pleasing only when a state was well governed, but in a state like Duke Huan's, in which government was neglected, the sound of bells was sad. Duke Huan approved of this rather audacious speech. Drawing a sword, he cut the silk ropes holding the bells and chime stones so that they fell to the ground. He immediately embarked on a comprehensive program of governmental reform that eventually brought peace and stability to his realm. Only then, with Guan Zhong looking on approvingly, did he order that the bells and chimes be reinstalled in their frames and remark that at last it was possible to take pleasure in music.[12]

The twentieth chapter of the *Xunzi,* the work of Confucian philosopher Xunzi from the third century B.C., contains China's earliest extant lengthy treatise on the theory of music. It says, in part:

> Music is the expression of joy.[13] This is something which inevitably arises from human feelings. . . . In a person's conduct, his sounds, movements, and pauses are expressive of all the changes in his mood. . . and when there is joy, it must have a physical embodiment. When this embodiment does not conform to right principles, there will be disorder. The early kings hated this disorder, and so they established the music [genres] of the Ya and Song to guide it. They caused its music to be joyful and not to degenerate, and its beauty to be distinct and not limited. They caused it in . . . its rests and notes, to stir up the goodness in men's minds and to prevent evil feelings from gaining any foothold. This is the manner in which the early kings established music. . . . When music is in the temple of the royal ancestors, and ruler and subject, superior and inferior, listen to it together, all of them are attuned in reverence; when it is in the household, and father and son, elder and younger brother listen to it together, all are attuned in kinship; when it is in the neighborhood, and elder and younger listen to it together, all are attuned in obedience.[14]

This ceremonial music of the Zhou court struck Confucius as being profoundly beautiful: "When the Master was in Qi, he heard the Shao music performed. For

three months afterwards he did not even notice the taste of the food he ate. He said, 'I had no idea that music could reach this level of excellence.'" (*Analects 7*)

Such attention to the virtue-promoting character of music was not limited to the central states of the North China plain. On the basis of epigraphical evidence, the rulers of the great southern state of Chu appear to have been scrupulous in their performance of the prescribed rituals of ancestor veneration.[15] They were conservative musically and liturgically and orthodox in their formalities, perhaps in an attempt to counter the widely held opinion in the north that the people of Chu were indolent quasi barbarians. From the ensemble's honored place in the central chamber of Marquis Yi's tomb and the adoption of Zhou pitch standards in the tuning of his bells (see Chapter 2), we may suppose that when appropriate, he too was orthodox in his observance of the rites.

Nevertheless, however uplifting the Master himself found the "pure" or "elegant" music (*ya yue*) of the old Zhou court, many other people found it boring. An anecdote in the *Yue Ji* tells of Duke Wen of Wei (fourth century B.C.) complaining to his minister, Zi Xia: "Whenever I put on my ceremonial robes and cap and listen to the ancient music, I have to be careful not to fall asleep. When I listen to the music of Zheng and Wei, I do not feel tired at all. Let me ask, why do I feel so differently about the old music and the new?"[16] By the Warring States Period (480–221 B.C.) the old Zhou aristocracy had largely been shouldered aside by a new breed of social elite, risen from the middle ranks of the nobility or from families of hereditary functionaries, infatuated with power and uninterested in the ancient rites.[17] This "new elite" might have used "virtuous" music when it suited their needs politically, but for entertainment, they preferred something a bit more lively.

Music is powerful and therefore potentially dangerous. The Confucian insistence on music as a force for virtue and an essential element of good government assumes, at least implicitly, that it can also be a force for vice. As can be seen in some of the passages quoted above, the texts advised rulers to be vigilant in rooting out debased or depraved music. But of course not all rulers, nor all commoners either, were watchful. Some indeed were ardent in their pursuit of unwholesome stimuli.

If "music as virtue" was linked to ceremonials, ritual, and the proper conduct of government, "music as vice" was unrestrained by ritual or propriety. The music of vice was found in public entertainment; in emotional (and particularly sexual) arousal; in "wildness," "excess," and abandon of all kinds; and in "lewd rites"—by which was meant any ceremonial performance that involved actions beyond the bounds of ritual and decorum or that usurped the prerogatives of higher ranks of the nobility or royalty. But mostly, in this context, "indecency" meant simple, old-fashioned sexual excess and depravity, to musical accompaniment.

The last king of the Shang dynasty (ca. 1600–1050 B.C.), whose realm was

overthrown by the virtuous founders of the Zhou dynasty, was held up by historians of the Han dynasty (206 B.C.–A.D. 220) as the epitome of the wicked king whose depravity cost him his throne. In possibly highly imaginative accounts of his reign, degenerate music looms large:

> He loved wine and licentious music, and devoted himself to his concubines. . . . Thus he had Shi Zhuan create new and depraved sounds, the "Northern Suburb" dance, and the "Fluttering Earthwards" music. . . . He assembled a large company of musicians and actors at the Shaqiu Garden, filling a pond with wine and hanging up meats to make a forest; he caused men and women to disrobe and pursue each other through this scenery, as part of a drinking feast lasting long into the night.[18]

The philosopher Yang Zhu, in the fourth century B.C., advocated a kind of hedonism that he called "living to the full." The author of the *Guanzi* regarded such hedonism as a prescription for disaster:

> It means indulging in gluttonous tastes, music, and sexual pleasures, and considering this to be taking care of their lives. Thus they will follow their desires and behave with reckless abandon. Men and women will not be kept separate, but will revert to being animals. Consequently the rules of propriety, righteous conduct, integrity, and a sense of shame will not be established, and the ruler will be left defenseless.[19]

And as for the ruler himself:

> If he constantly pursues his own pleasure and awards positions to actors and clowns; if when outside the court he indulges in fast horses and hunting while when inside the palace he lets himself go with beautiful women and licentious music, those below will become lazy and careless. If the various functionaries lose their sense of uprightness, trouble and disorder will result, and the ruler will lose his country.[20]

Music and ritual were assumed to be vital to the proper ordering of society and the conduct of good government; but once the means to produce music existed, it was hard to control what sort of music might be played.

For rulers and social theorists of the central states of the North China Plain, the notion of "lewd music" was inevitably entwined with ideas of what constituted Chinese, as opposed to "barbarian," culture. As the territory of ancient China expanded, "Chineseness" came to be defined not ethnically but culturally—by the acceptance of Chinese norms of food, clothing, ritual behavior, and the like. Departures from these norms marked a person as foreign, or "barbarian." It appears likely that much of the new music that so agitated Confucian moralists was imported from "barbarian" cultures on China's periphery. Such music would be associated with non-Chinese clothing, customs, dances, poetry, and perhaps also religious shamans and mediums.

In this context it is important to note that the realm of Marquis Yi would

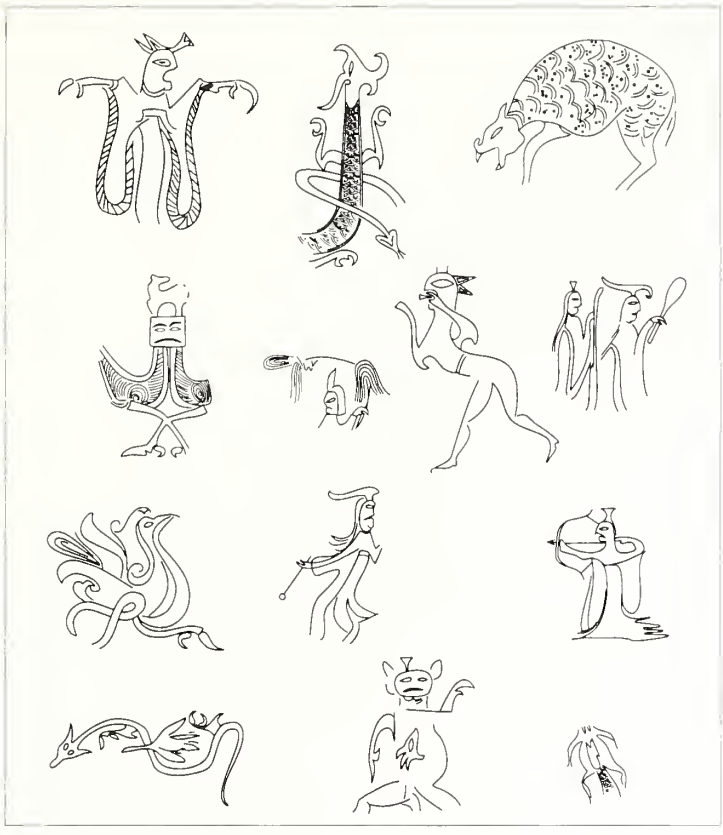


Fig. 1.10 Drawings of figures on fragments of a lacquered wooden *se*-zither from Changtaiguan, Xinyang, Henan Province. Fourth century B.C. Drawings by Bo Lawergren after Huang Xiangpeng 1996, Henan: 132–34.

have been regarded in his own time as reflecting the culture of the powerful but "semibarbarian" state of Chu. The scenes painted on the sides of a duck-shaped box buried in the marquis's tomb, which show a dancer in fancy dress swaying to the beat of a drum while a birdheaded or masked figure strikes bells suspended from a rack supported by dragons, may represent a musical event involving shamanistic practices (see fig. 1.8, details a–b). Figures with long-sleeved, trailing robes depicted on the inner coffin of Marquis Yi may represent shamans or deities (see fig. 1.4 detail); similar humanoid shaman images in ritualistic postures have been found on a lacquered *se* from a Chu tomb from the fourth century B.C. at Xinyang, Henan Province (fig. 1.10). On both the coffin and the *se,* the shamans are surrounded by birds, dragons, snakes, and hybrid monsters. The presence of beings of this kind on a musical instrument suggests an overt link between the performance of music, and religious beliefs and practices, including shamanic possession.[21]

An unusual bronze model of a house excavated from a tomb of the fifth century B.C. in Shaoxing, Zhejiang Province, suggests that small musical ensembles might have been popular in the south (fig.1.11).[22] Inside the bronze model are six very informally dressed (bare-chested) performers: one plays a drum, another a mouth organ; two appear to be singing; and two play elongated multistringed instruments (*zheng;* see fig. 3.11), apparently to accompany the singers. The informality — and by central states standards, the positive indecency — of the performers' clothing suggests that Chinese cultural conserva-

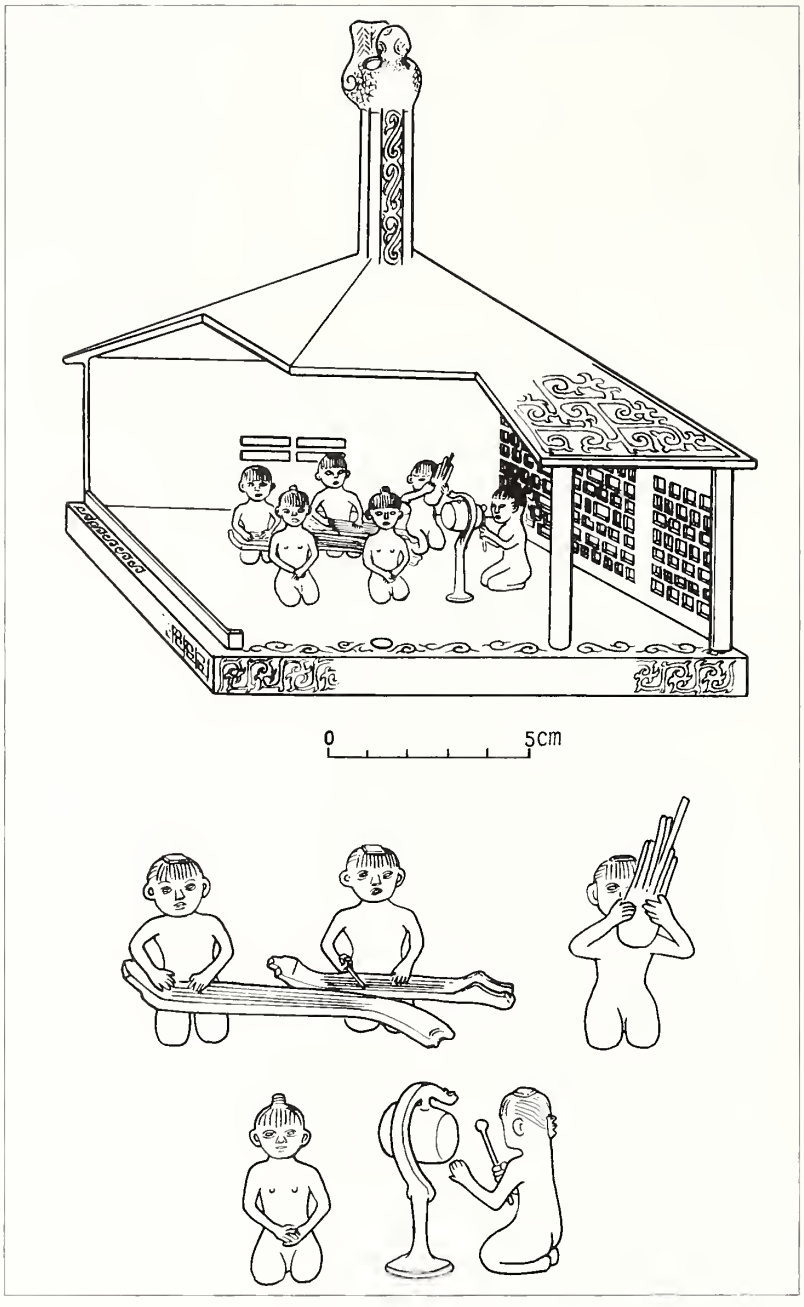


Fig. 1.11 Drawing of a bronze model of a house with musicians from Tomb 306, Shaoxing, Zhejiang Province. Fifth century B.C. (Dimensions of the model are: height 17.0 cm, width 13.0 cm, depth 11.5 cm.) Drawing by Li Xiating after *Wenwu* 1984, 1: 17, 24, figs. 17, 38.

tives would have regarded the performance as both lewd and barbarous. The small size of the ensemble and the combination of strings with the human voice suggest the kind of chamber music Marquis Yi might have enjoyed in his residential quarters.

The two ensembles from the marquis's tomb present archaeological evidence for the coexistence of two different types of musical ensembles in late Bronze Age China. They illustrate the different settings in which the music was performed (central hall versus private quarters), as well as the number (large versus small) and types of instruments (percussion-dominated versus string-dominated) used. For reasons of state Marquis Yi, like Duke Wen of Wei, sponsored performances of the more traditional ceremonial music; but left to him-

self, he seems to have preferred the more intimate and seductive sounds of the popular, local music of his time.

Of course, the link between music and morality is a familiar one in the West, as much a part of Greek philosophy as of Chinese, and certainly a concern in contemporary life as well. One can sympathize with the earnest Confucians of twenty-five centuries ago who saw in various styles of exotic, wild, unrestrained music the symptoms of moral degeneracy eating at the heart of their society. On the other hand, there was more to the Confucian fear of popular music than a kind of generational disapproval of the Warring States equivalent of hard rock or disco. The Confucians' view was more akin to the view of Johannes Kepler (1571–1630) that music is inherent in the fabric of the universe itself.

Most early Chinese philosophers saw music as a natural phenomenon that was discovered, not invented, by the ancient sages. There are a number of early Chinese accounts of the origins of music, differing in details but similar in spirit. Some legends say that music was discovered by the Yellow Emperor (Huangdi), a mythical ruler who by the early Han dynasty was credited with the invention of many fundamental aspects of Chinese culture, including metallurgy and the calendar. Another theory was that wise men heard the singing of *feng* and *huang* phoenixes and imitated the sounds they made, thus giving rise to the five tones and the twelve pitches.[23]

A passage from the *Yue Ji* elaborates on this theme: "The *qi* [resonant energy] of Earth ascends on high, and that of Heaven descends below. The *yin* and the *yang* act upon one another, and the *qian* and the *kun* trigrams copulate with each other. They are drummed on by thunder, excited by wind and rain, moved by the four seasons, warmed by the sun and moon, so that all the processes of change and growth vigorously proceed. This being so, music represents the attunement of Heaven and Earth."[24]

Music's role in cosmology made it an essential component of the *ganying* theory of resonance, in which things in similar categories of being were believed to sympathetically affect each other via resonant action at a distance (and without any visible physical connection between them). Music was therefore explicitly and intimately a part of magic in early China. Many texts from the third and second centuries B.C. (and later) elaborately correlate the lengths of the twelve pitch pipes with various weights and measures, endow the correlations with numerological significance, associate the five tones with the *wuxing* or Five Phases (wood, fire, earth, metal, and water), and so forth. There was a ritual called "watching for *qi*" in which a pitch pipe was expected to produce a tone spontaneously in an appropriate direction at the change of a month, a season, or a year.[25] This may seem bizarre to us, but it derives from a consistent set of assumptions about music and the cosmos: the universe is permeated by harmonies and resonances, which the sage can understand and employ to achieve

Fig. 1.12 Detail, *Playing the Qin under Pines.* Ming dynasty (1368–1644). Ink and color on paper. Overall height 22.2 cm, width 105.3 cm. Freer Gallery of Art, Smithsonian Institution, F1953.84.

his aims. But if music was a part of public affairs, in court ceremonials and ritual feasts, and in the calculations of astrologers and adepts, or indeed in the debaucheries of unfit rulers, it also had a private dimension.

THE MYSTIQUE OF THE *QIN*

"Because of the deep influence which music exerts on man, and the change that it produces in manners and customs, the ancient kings appointed it as one of the subjects of instruction."[26] Since music is capable of touching the deepest chords of the soul itself, it was considered a true external manifestation of the inner state of one's being. For this reason, personal performance of virtuous music was an important aspect of self-cultivation, part of the effort by members of the ancient Chinese elite to perfect their moral and spiritual power.

The *Yue Ji* notes that "music encompasses the totality of moral relations and principles. Even beasts comprehend sounds; ordinary people know about different tones; but only the nobleman knows music. . . One examines music to know about government, thus perfecting the Way [*Dao* or *Tao*] of creating order."[27] The comment that "only the nobleman knows music" was enough to incite later generations of scholars to perfect their *qin* technique and cultivate, or at least affect, a taste for morally uplifting music. Indeed the familiar image from later Chinese art of the scholar playing the seven-stringed *qin* (fig. 1.12) derives from the tradition of Confucius accompanying himself while singing the classic Odes of the *Shi Jing.*

The *Analects* only hints at the Master's prowess as a musician, and it is by no means certain that the *qin* would even have been invented in time for

Confucius to have played it. But in later accounts of Confucius's life, the idea that he loved to play the *qin* had become firmly established. Confucius was described in the *Li Ji* as being an expert player of both the *qin* and the *se*, stringed instruments that particularly lent themselves to introspective solo performance. Only extreme mental agitation, and a long period of being out of practice, could mar Confucius's technique: "Five days after completing the period of mourning [for his parents], Confucius began playing his *qin* again. But he was unable to produce any perfect notes."[28]

Fig. 1.13 Detail, back of a bronze mirror showing Bo Ya playing a *qin* underneath a tree. He is flanked by his teacher Cheng Lian and Zhong Ziqi, who appears to be clapping his hands and tilting his head to the music. Western Han period. Second century B.C. Freer Gallery of Art, Smithsonian Institution, F1935.13.

The musical and expressive range of the *qin*, and its association with Confucius, ensured that from the Han dynasty onward, it came to be regarded (in its classical seven-stringed form, see fig. 3.8.4) as the ultimate vehicle for self-cultivation and individual expression for the gentleman-scholar. It was an instrument to be enjoyed in quiet solitude or shared among kindred spirits. Wonderful stories were told about this instrument, the most famous being those describing the intense relationship between a legendary *qin* player, Bo Ya, and his most devoted admirer, Zhong Ziqi. The two were apparently so "in tune" with each other that when Zhong Ziqi died, Bo Ya broke his instrument, cut the strings, and vowed never to play again, convinced that there was no one left who could understand his playing. Early popularity of this story is illustrated by its occurrence on the back of bronze mirrors from the second century B.C. (fig. 1.13).[29]

In view of the close association of Confucius and the *qin*, and the later admiration of the literati for its virtuous connotations, it is ironic that the *qin* was perhaps itself of non-Chinese origin. We have already noted that the ten-stringed *qin* stands out among the instruments of Marquis Yi's chamber ensemble. Its unusual tuning mechanism suggests links with the cultures on China's northern frontier (see Chapter 3). The fact that the *qin* and the *se* are mentioned with about equal frequency in the *Shi Jing*, a northern compilation, but only the *se*, and not the *qin*, is mentioned in the *Chu Ci*, a southern poetic composition, further supports its possible northern origin.[30] Finally, the complete lack of Chu-style decoration, not only on Marquis Yi's *qin* but also on examples excavated from other Chu tombs, seems to indicate that the instrument was regarded in Chu as being non-native in origin and in appearance appropriately set apart from other Chu instruments. In the context of Marquis Yi's small ensemble, the *qin* may have been regarded as an exotic instrument lending a distinctive voice to the performance of his chamber ensemble.

But if the *qin* was exotic in Chu, it may nevertheless have had some following there. At least this is suggested by persistent hints in the texts that associate the *qin* with the state of Chu. Bo Ya and Zhong Ziqi were natives of Chu. Some of the best-known *qin* melodies were supposed to have been created by Chu composers; the oldest surviving tune for the *qin* — the "Lonely Orchid" (*You*

Lan) — is said to have been based on a Chu melody. Whatever its origins, the *qin* evidently lent itself as readily to the "new" music of the south as to the traditional music of the Zhou court in the north.

Although later accounts of the *qin* seem to ascribe to the instrument itself an almost mystical virtue-inculcating quality,[31] it is important to bear in mind that, within wide limits, very different sorts of music can be played on any given musical instrument or by an ensemble; the difference lies in the composition and performance style, not so much in the instrumentation. The marquis's court ensemble could have played a somber hymn in the *Shi Jing* and participated in the lewd musical revels of the *Chu Ci* just as the same violin, for example, might be used to play the mathematically austere theme of a Bach fugue or the sobbing cadenzas of a gypsy lament. Even if the *qin* indeed originated as a foreign instrument, Confucius nevertheless accepted it as a wholly Chinese one, if we are to believe the later traditions. Though Marquis Yi might have enjoyed listening to his female musicians playing licentious music on his ten-stringed *qin* and the other instruments of his chamber ensemble, Confucius was thought to have used the same sort of instrument to perform the music of self-cultivation a half-century or more earlier. The evidence from the tomb of Marquis Yi tells us that the early history of the *qin* was not necessarily so simple and pure as later literati musicians would have liked to believe.

Future finds may shed further light on the origins of the *qin* and other early Chinese musical instruments. What is already clear is that the instrumentation represented by Marquis Yi's chamber ensemble was the wave of the future in ancient Chinese music. The marquis's grand ensemble for playing percussion-dominated court music must have been one of the last glorious examples of its kind. Large bell sets were rare from the fourth century B.C. onwards.[32] For instance, in a Chu tomb from the late fourth century B.C. the only musical instrument buried was a seven-stringed *qin*.[33] By the Han dynasty, the technology of casting two-toned bells, like those of Marquis Yi's chimes, had been lost. From the Six Dynasties, Sui, and Tang periods onward, even formal court ceremonial music was played by ensembles dominated by strings and wind instruments (along with various types of drums), while the seven-stringed *qin* and the music composed for it were universally admired by China's rulers, literati, and poets.

The grand court ensemble of Marquis Yi of Zeng is a spectacular embodiment of a musical tradition that had been lost for more than two millennia; his chamber ensemble presents a glimpse of the earliest "modern" Chinese music that emerged during the same two thousand years.

Notes

1. For a listing of some of these passages, see Kaufmann 1976.

2. For a complete account of the tomb in Chinese, see Hubei 1989, summarized in So 1994 and So 1995: Introduction 5.2, Appendix 1:5.B.

3. *Wenwu* 1985, 1: 16–36; Huang Xiangpeng 1996, Hubei: 29–35; English summary in So 1995: Appendix 1:5B. (References to journal articles without author names, such as this one to *Wenwu*, refer to year of publication, issue number, and page numbers.)

4. Chen Cheng-yi 1994; Falkenhausen 1993b; So 1995: Introduction, 5.2.

5. All translations in this chapter are by John S. Major (JSM) unless otherwise noted, citing only chapter and/or sections without references to page numbers of specific editions.

6. Hawkes 1985: 228–29.

7. For the arguments for and against the existence of stringed instruments as early as the Shang dynasty, see Tong 1982: 61, who noted that evidence for stringed instruments in the Shang is inconclusive.

8. Two of the five *se* found with the chamber ensemble appear to be incomplete and are perhaps not musically viable instruments (Hubei 1989: 161–62).

9. Similarly plain *se* have also been recovered from Chu contexts. See table 110 in Li Chunyi 1996: 442, in which he lists *se* with simple lacquered surfaces from a variety of Chu sites. Most of these came from less richly furnished tombs, suggesting a link between the instrument's appearance and the social position of its owner.

10. Fung Yu-lan 1952–53, 1: 342–43, adapted by JSM.

11. Ibid.

12. For the complete passage, see the ninth chapter of *Guanzi* in Rickett 1985: 350–51.

13. "Music" and "joy" are written with the same character, though pronounced differently; the explicit link between the two concepts of "music" and "joy" thus goes back at least to an early stage of the development of the written Chinese language.

14. Fung Yu-lan 1952–53, 1: 341–42, adapted by JSM.

15. Cook and Major 1999: 67–76.

16. Translated by JSM after Legge 1899, 2: 116–17.

17. The social, political, and economic changes during this period are discussed in Hsu 1965.

18. This is from the third chapter of the *Shi Ji*, Takigawa 1932–34, 1: 26–27.

19. *Guanzi* 1, 4 (Rickett 1985: 110–111).

20. *Guanzi* 4, 11 (Rickett 1985: 212).

21. For Chu culture and its significance in ancient China, see Cook and Major 1999: 121–69.

22. The find is reported in *Wenwu* 1984, 1: 10–26.

23. Described in the third chapter of *Huainanzi*, as quoted in Major 1993: 113.

24. *Yue Ji*, tr. by Derk Bodde in Fung Yu-lan 1952–53, 1: 344, adapted by JSM.

25. See *Huainanzi* in Major 1993: 92, 108; see also Bodde 1959; Needham 1962, 4: 1, 135–141.

26. From the *Yue Ji*, adapted by JSM (Legge 1894, 2: 107).

27. Adapted by JSM (Legge 1894, 2: 95).

28. From the *Li Ji* (Chapter 2, part 1), adapted by JSM (Legge 1885, 1: 130).

29. A mirror with motifs almost identical to those in fig. 1.13 was recovered from a Han nobleman's tomb (mid-second century B.C.) in Xuzhou, northern Jiangsu Province (*Wenwu* 1997, 2: 12, fig. 18, back cover).

30. We thank Gopal Sukhu for pointing this out (personal communication). For various links between Chu culture and the culture of the northern frontier, see Major 1978. For north–south distribution of the *se* and *qin*, see also Chapter 3.

31. See many instances of this in Gulik 1969a.

32. Described in Falkenhausen 1993b: 189–93; see also Chapter 5.

33. The find is reported in *Wenwu* 1997, 7: 35–48.

TWO | Percussion

ROBERT BAGLEY

THE PERCUSSION instruments in the tomb of Marquis Yi of Zeng comprise a set of bronze bells (fig. 2.1), a set of chime stones (fig. 2.22), and four drums (Checklist nos. 5, 6, 16). The drums are not in playable condition, but they were probably instruments of indefinite pitch used for rhythm and emphasis. (The bass drum and snare drum of a modern Western orchestra are instruments of indefinite pitch; the timpani are tunable instruments of well-defined pitch, so composers write for sets of two or more.) One drum belonged to the small ensemble of zithers and mouth organs in the east chamber of the tomb. The other three, of three different types, were found in the central chamber, along with the bells, chime stones, and fifteen wind and string instruments.

Winds, strings, and drums probably formed the core of any musical ensemble in ancient China. Chime stones may have been a fairly common supplement, but bells must have been so costly that only the wealthiest aristocrats could afford even modest sets. Those sets could contribute sonorous accompanying notes to the music of the other instruments, punctuating the melodies played on winds and strings, but only in one or two keys could they have played even the simplest melodies themselves.

The set of bells found in Marquis Yi's tomb, however, has no such limitation. It is a fully melodic instrument, supplying all twelve notes of the chromatic scale — in other words, all the notes found on a piano keyboard — over a range of three octaves (a less dense scale continues for two more octaves). It is not likely to have been the principal melodic instrument of the marquis's ensemble, if only because the lingering sound of bells made them unsuited to follow the fastest melodies. The winds and strings, not to mention singers, were more agile and lyrical. But at moderate speeds the bells were not limited to accompanying notes; they could play any melody that we could play on a piano.

THE BELLS

Marquis Yi's bells and chime stones are extraordinary in many ways. No other ancient musical instruments tell us so much — or raise so many puzzling questions — about musical performance, music theory, and acoustic technology. The very existence of tuned sets of bells is not easy to explain. In ancient China sets of bells were both aurally and visually the most prominent instruments of musical ensembles, but in the ancient world outside China they were unknown. A typical Near Eastern bell of Marquis Yi's time, the fifth century B.C., is depicted in the Persian relief shown in figure 2.2. The largest known ancient Roman bell is about six centimeters high. In Europe, church bells grew large only in the middle ages, and groups of bells able to play short melodic phrases (for instance, to strike the hours) were a still later development. Even today, tuned sets of bells have only a marginal role in Western music, in the form of carillons or as occasional supplements added to the orchestra for programmatic reasons (as in the witches' sabbath movement of Berlioz's *Symphonie Fantastique*).[1] Yet two millennia before the first carillons were made in Europe, Marquis Yi owned a set of sixty-five tuned bells that weigh altogether two and a half metric tons. The technological achievement is formidable, and another feature of the marquis's bells and chime stones is more remarkable still: they have inscriptions about music. These inscriptions are the oldest record of musical thinking known from China.

Unlike the other instruments of ancient ensembles, bells are often found in playable condition, making it possible to measure their pitches and study their acoustic properties. Marquis Yi's set has a range of five octaves that begins two octaves below middle C. Its three-octave chromatic stretch begins a fifth above the lowest bell. That bell, two octaves below middle C, is located at the outer end of the short arm of the stand (fig. 2.3). It weighs 203.6 kilograms and, including its 66-centimeter stem, measures 152 centimeters high. The stand on which the bells were displayed, made of lacquered wood with bronze fittings, survived intact despite the weight it carried (see fig. 1.3; the present stand is a replica). One of the sixty-five bells does not match the rest (fig. 2.4). Instead of a musical inscription, it has an inscription recording that it was a gift presented to Marquis Yi in 433 B.C. by the king of Chu. Apparently the bell closest to it in pitch was removed from Marquis Yi's set to make room for it on the stand; the displaced bell was not in the tomb. In figure 2.1 the Chu king's bell, suspended differently from the others, is on the bottom tier of the stand, the sixth bell from the left on the long arm. It is important for the information its inscription provides — not only a date for the tomb but also evidence of close relations between Zeng and the powerful state of Chu — but it is not otherwise relevant to a discussion of the musical bells.

Preceding page: detail, fig. 2.3

The bells on the top tier of the stand were probably not played. They are

Fig 2.1 Set of sixty-five bells from the tomb of Marquis Yi of Zeng, Leigudun, Suizhou, Hubei Province. Ca. 433 B.C. Bronze. Long arm of stand 265 cm high, 748 cm long; short arm 273 cm high, 335 cm long. On the middle tier, the eleven bells on the short arm are the subset designated by the archaeologists as M1. Moving from left to right, the first twelve bells on the long arm of the middle tier are the subset M2, the next ten are the subset M3. Within subsets, bells are numbered from left to right; thus for example the largest bell in M3 is M3–10. Similarly, the lower-tier bells are numbered L1–1 to L1–3 on the short arm, L2–1 to L2–10 on the long arm. The Chu king's bell (fig. 2.4) is L2–6. The upper-tier sets are U1 (on the short arm), U2, and U3. Hubei Provincial Museum. Photograph by John Tsantes.

out of reach (the stand is 2.73 meters high); they duplicate pitches available on the middle- and lower-tier bells; and their inscriptions suggest another purpose that will be discussed further on. The forty-five bells in the middle and lower tiers were evidently played by five performers who stood on both sides of the stand (the bells tilt toward the performers). Two in front of the stand played the large bells in the lower tier; three behind the stand played three distinct subsets of bells in the middle tier. The middle-tier bells were struck with mallets, the lower-tier bells with long poles of lacquered wood (figs. 2.5a, b). The players behind the stand used two mallets each; six mallets were found in the tomb. Two poles for the two players in front were found leaning against the stand (see fig. 1.3).

The use of five performers tells us that the bells played rather complex music. In modern performances like the one shown in figure 2.6, the middle-tier bells carry the melody while the big bells on the lower tier, which have a more lingering sound, contribute accompanying notes. The three middle-tier subsets differ in decoration (figs. 2.7–2.9 show one bell from each), and each subset seems to be musically more or less self-contained. One of them, seen from the performer's side in figure 2.3, consists of eleven bells on the short arm of the stand. The other two, one of twelve bells and one of ten, are on the long arm of the stand; the performers in figure 2.6 are playing these two. Each performer had to memorize the layout of the pitches in his subset; for reasons that

will emerge in a moment, the pitches are not in ascending order, like the keys of a piano, but more irregularly distributed, like the pitches of a woodwind or brass instrument. The subsets have curiously interrelated inscriptions, and it is an unsolved problem to understand the logic, musical or other, by which the set as a whole was put together. There is reason to believe that the bells and stand as found in the tomb represent only the latest of several stages of expansion and rearrangement, but the earlier stages are difficult to reconstruct.

Each of the middle- and lower-tier bells (always excepting the Chu king's bell) bears in the central panel on one side an inscription that says "Marquis Yi of Zeng made this, cherish it" (see fig. 2.9, detail). All the other inscriptions on each bell, front and back, have to do with music. Written in spectacular calligraphy and inlaid with gold, these musical inscriptions are unique. Several thousand bells from Marquis Yi's time and earlier have been unearthed, and many of them are inscribed, but the inscriptions invariably are commemorative texts, like the dedication on the Chu king's bell. Outside the marquis of Zeng's tomb, not a single bell with a musical inscription has ever been found. When we examine the content of the inscriptions, it will be clear that they were not written for the benefit of the performers. They were surely addressed to a more exalted audience, including no doubt the marquis himself, and the significance they had for him must have gone beyond their ostensibly musical content. But what that significance was remains a mystery.

The first thing the musical inscriptions draw our attention to is something very unexpected. The bells are not circular in cross section, they have an almond-shaped cross section (fig. 2.10), and their inscriptions alert us to the surprising fact that a bell of almond-shaped cross section can produce two

Fig. 2.2 Bactrians bringing tribute to the Persian king. East Apadana stair, palace of Darius and Xerxes, Persepolis, Iran. Early fifth century B.C. Stone. Photograph courtesy of the Oriental Institute of the University of Chicago.

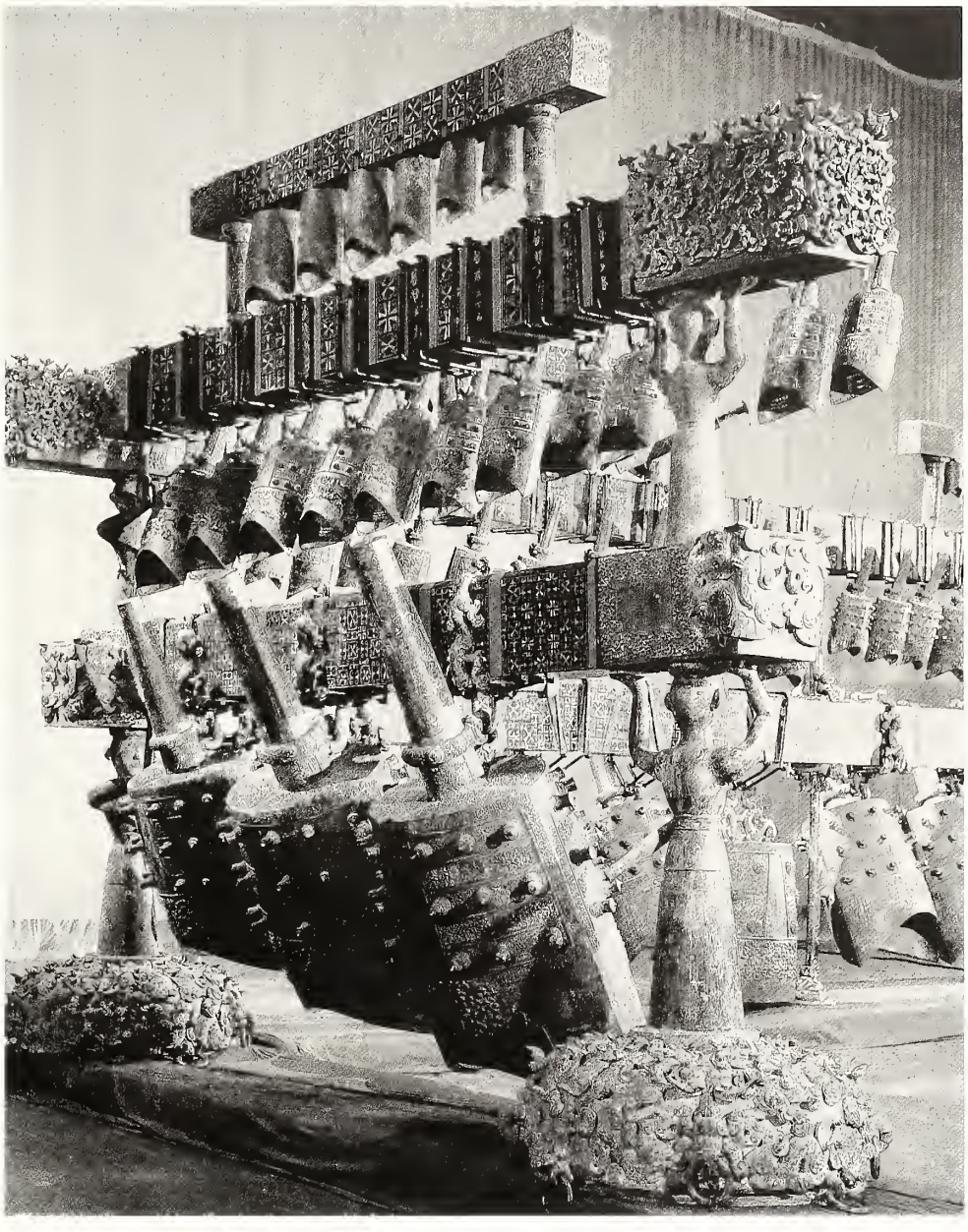


Fig. 2.3 Short arm of the stand, seen from behind. From the tomb of Marquis Yi of Zeng. After Tan Weisi 1992: pl. 2.

different fundamentals: the player can obtain two different notes from the bell depending on where he strikes it. The inscriptions make this clear, for they label the strike points with the names of the notes. The inscription in figure 2.11a names the note obtained if that particular bell is struck on its central axis; the one in figure 2.11b names the note obtained if the bell is struck near the side (only one such point is labeled, but of course the same pitch will be heard if the bell is struck at any of four symmetrically located points). In figure 2.9 the labels of both strike points are visible. The two notes can conveniently be referred to as the A- and B-tones. The A-tone is sounded by striking on the central axis of the bell (on front or back); the B-tone, which is always higher in pitch, by striking near the side. Obviously it was to exploit the two-tone phenomenon that ancient Chinese bells were struck on the outside with mallets or

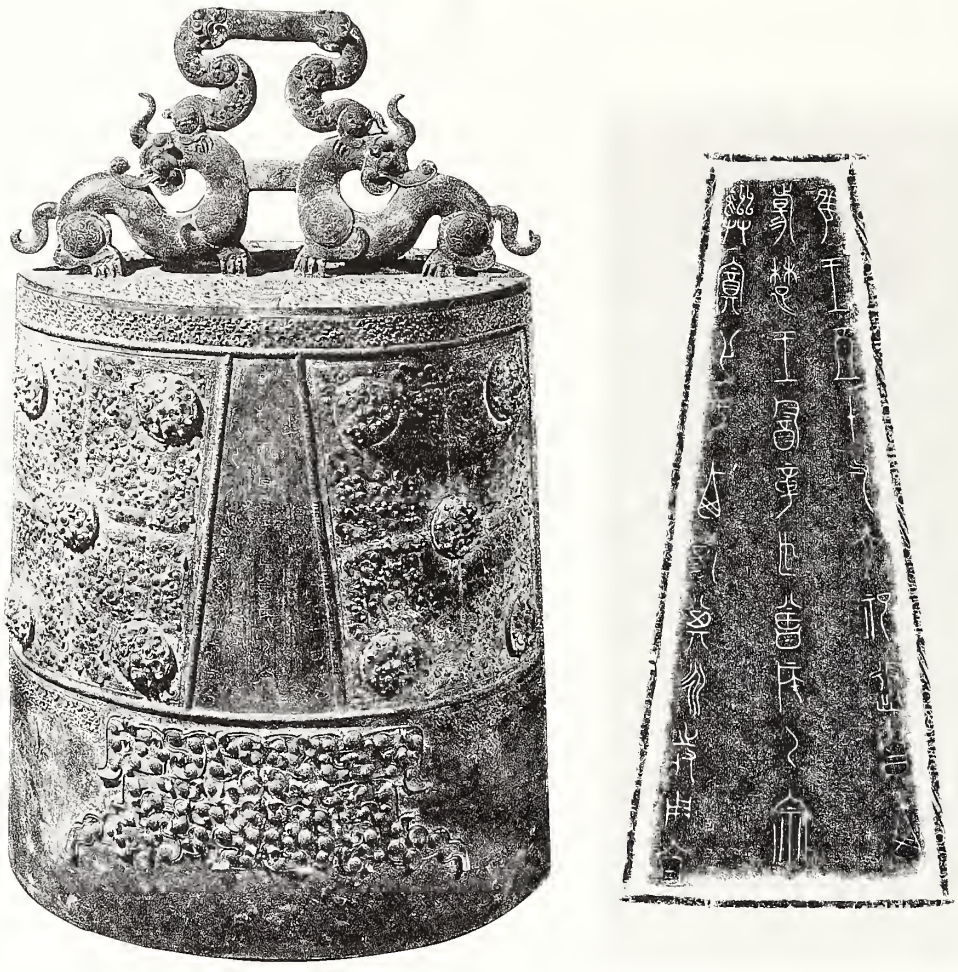


Fig. 2.4 Bell of the type *bo* donated by the king of Chu, with a rubbing of the inscription (which includes a date equivalent to 433 B.C.). From the tomb of Marquis Yi of Zeng. Bronze. Height 92.5 cm, weight 134.8 kg. Though some details are uncertain, the inscription can be translated approximately: "It was the king's fifty-sixth year. Returning from Xiyang, King Yan Zhang of Chu made temple implements for Marquis Yi of Zeng and placed them at Xiyang. May they be forever cherished and used in sacrificing." Hubei Provincial Museum. After *Zhongguo wenwu* 2 (1980): 18.

poles instead of being sounded with clappers: to produce a clear tone the bell must be struck at exactly the right spot. Of the forty-five middle- and lower-tier bells — the ones that were played — thirty-one produce notes a minor third apart, fourteen produce notes a major third apart: the B-tone is either a minor or a major third higher than the A-tone. (The bells thus cannot be suspended with all the notes in pitch order; to play a chromatic scale requires a sort of zigzag progress along the stand.) The tone labels use a *do-re-mi* nomenclature, as in our Western major scale, *do-re-mi-fa-sol-la-ti-do.* The bell shown in figures 2.11a, b sounds *mi* and *sol. Do-re-mi-fa-sol-la-ti-do* are what musicians call solmization syllables. The Chinese equivalents of these syllables make their earliest known appearance in the inscriptions of Marquis Yi's bells: the strike points of his bells are labeled with solmization syllables.

Solmization syllables do not specify absolute pitches (a chorus warming up may sing *do-re-mi-fa-sol-la-ti-do* over and over again, starting each time at a higher pitch *do*).[2] Thus the labels *mi* and *sol* in figures 2.11a and b are not enough to tell us the pitches produced by that bell; by themselves they tell us only that the two pitches are a minor third apart. However, longer and more extraordinary inscriptions on the other side of each bell relate its pitches to a series of named absolute pitches. These inscriptions take the form of multiple

Fig. 2.5a Mallet, lacquered wood, one of six for playing the middle-tier bells. From the tomb of Marquis Yi of Zeng. Length 62 cm. Hubei Provincial Museum. Photograph by Hao Qinjian. (See also Checklist no. 3a.)

Fig. 2.5b Pole, lacquered wood, one of two for playing the lower-tier bells. Found leaning against the bell stand in the tomb of Marquis Yi of Zeng (see fig. 1.3). Length 215 cm. Hubei Provincial Museum. Photograph by Hao Qinjian. (See also Checklist no. 3b.)

Fig. 2.6 Players at the second and third of the middle-tier subsets. Photograph by Hao Qinjian.

definitions of the bell's two tones. From them we learn among other things that the *do* of the strike-point labels is a reference pitch called Guxian; if we measure the pitch at any strike point labeled *do,* we will find that Guxian is very close to our pitch C. Figure 2.12 shows the A-tone definition from one of the lower-tier bells; figure 2.13 shows part of the B-tone definition from the same bell (the

Fig. 2.7 Bell from the first middle-tier subset (M1–11, the largest bell in M1). Height 71.8 cm, weight 26.8 kg. Hubei Provincial Museum. Photograph by Pan Bingyuan.

Fig. 2.8 Bell from the second middle-tier subset (M2–11). Height 68 cm, weight 24.2 kg. In the decoration of the M2 bells, the absence of bosses or knobs is unusual (compare figs. 2.7, 2.9). Hubei Provincial Museum. Photograph by Pan Bingyuan.

definition begins near the right-hand B-tone strike point and concludes near the left-hand strike point). These tone-defining inscriptions are the most fascinating and also the most perplexing feature of the set of bells. More will be said about them after we have considered some of the larger problems raised by tuned sets of bells: their manufacture, their history, and the musical scales they were meant to play.

CASTING A TUNED SET

The problems involved in manufacturing a musical set of two-tone bells are daunting.[3] In Marquis Yi's set, the inscriptions that name the notes on the strike points were cast with the bell, implying that the bronze founder was able to cast a bell that came out of the mold with two predetermined pitches. In other

Fig. 2.9 Bell from the third middle-tier subset (M3–8) with detail of gold-inlaid dedicatory inscription "Zeng Hou Yi zuo chi [Marquis Yi of Zeng made this, cherish it]" in the central panel. Height 75 cm, weight 32.2 kg. Hubei Provincial Museum. Photograph by Pan Bingyuan.

Fig. 2.10 View of the mouth of a middle-tier bell (M3–8), showing its almond-shaped cross section and A-tone label (*do*). Hubei Provincial Museum. Photograph by John Tsantes.

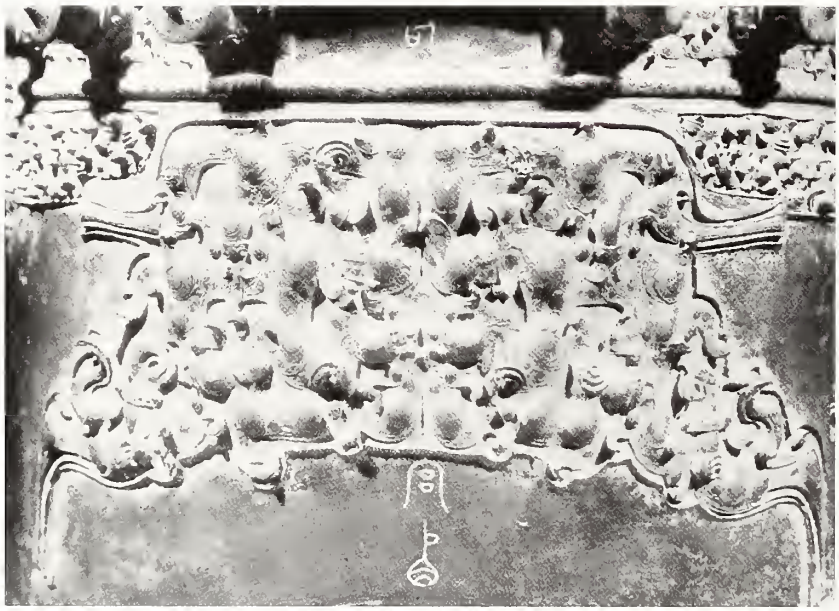


Fig. 2.11a (lower left) Bell M3–6, A-tone label (*mi*). After Rao and Zeng 1985: pl. 40.

Fig. 2.11b (lower right) Bell M3–6, B-tone label (*sol*). After Rao and Zeng 1985: pl. 41.

words, the caster did not obtain those pitches by accident; he knew in advance what they were going to be. If a bell came out of the mold with one or both pitches sharp, its tuning might be improved a little by filing on the inside wall, and most of Marquis Yi's bells are said to show signs of abrasion on the interior. But this postcast tuning was subject to the awkward limitation that filing a two-tone bell lowers the pitch of both notes, not just one. Depending on which parts of the interior were filed, one pitch could be lowered more than the other, but it seems unlikely that large shifts of pitch could have been made in this way. If a bell came out of the mold seriously out of tune, the caster's only recourse would have been to melt it down and cast another. Even for bells less extravagantly decorated than Marquis Yi's, mistakes were costly.

The caster of a musical set of two-tone bells can be thought of as having solved two distinct problems. First, he knew how to shape a bell so that there would be a specific musical interval between its two pitches (in Marquis Yi's set, either a major third or a minor third). And second, he knew how to cast another bell at a specific musical interval away from the first. Neither problem is simple. Consider, for instance, the problem of making the next bell. Let us suppose that the founder has one bell that has an agreeable tone and sounds middle C; how does he make a bell that sounds D — preferably with the same agreeable tone? He can do it by reducing the size, or increasing the wall thickness, or changing the shape, or any combination of the three; but unfortunately, no matter how he chooses to do it, he will not get musically decent results if he follows a mathematically simple formula (he needs a formula with logarithms or exponentials). The maker of the Zeng bells presumably did not have a formula that he could rely on, but if he was not following a formula, then it is hard to guess how he was operating. No doubt he drew upon centuries of experience, but what exactly did those centuries of experience tell him to do? How did he pass on his knowledge to an apprentice? He needed to be able to explain: "Here is a bell that sounds C; when you want to make a bell that sounds D, you . . . ." You what? Physicists have studied Marquis Yi's bells, and they have learned a great deal about the acoustic behavior of almond-shaped bells; they understand why an almond-shaped bell has two fundamentals, and they have identified features of the bell that can affect the A-B interval or the tone color. But they have

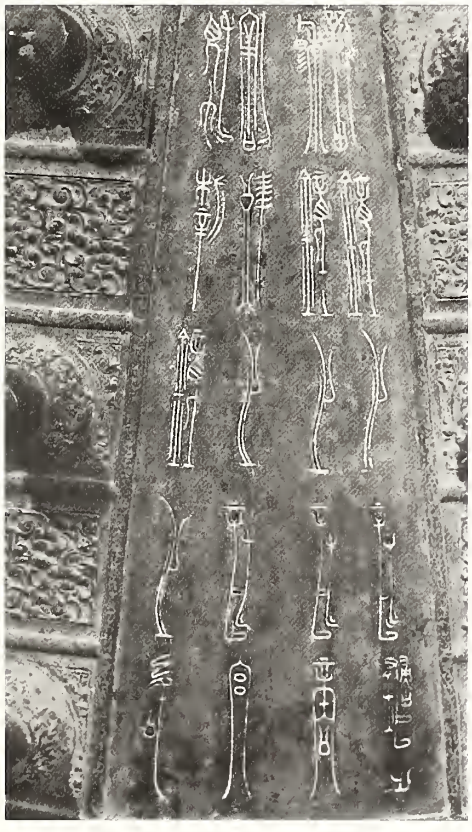


Fig. 2.12 Bell L1–1, A-tone definition. After Rao and Zeng 1985: pl. 7.

Fig. 2.13 Bell L1–1, B-tone definition, right half. After Rao and Zeng 1985: pl. 8.

not been able to deduce any sort of rule — a design procedure — from measurements of bells. We do not know how the ancient caster went about setting the A-B interval, nor do we know how he cast a second bell at the desired interval away from the first.

FROM SIGNALING INSTRUMENTS TO MUSICAL INSTRUMENTS

Fig. 2.14 Clapper bell from Erlitou, Henan Province. Ca. 1500 B.C. Bronze. Height 7.7 cm. After *Kaogu jinghua* 1993: pl. 94:2.

When we review the thousand-year history of bell sets, however, a possible alternative to rule-based design emerges: perhaps sets were not designed but replicated. On present evidence, the history of bell casting began about 1500 B.C. with tiny clapper bells. The example shown in figure 2.14, measuring 7.7 centimeters high, comes from Erlitou, a site in the middle Yellow River Valley, the traditional heartland of Chinese civilization. Similar bells from slightly later sites have been found at the necks of buried chariot horses and dogs, so in function they resemble the bell worn by the Persian camel in figure 2.2. These clapper bells were not musical instruments, but they already had the almond-shaped cross section that was later to prove musically important, not just for its two-tone capability but also, as we will see, for tone color, and hence for the appeal of bells to musicians. Presumably it was from these modest objects that all later bells, including Marquis Yi's, inherited the almond-shaped section.

When we trace the millennium of bell manufacture that led from the Erlitou clapper bell to Marquis Yi's tuned set of mallet-struck bells, we discover that the first five hundred years of research and development in bell design took place in south China, in the middle and lower Yangzi region. This is a considerable surprise, for the classical texts on which Chinese history has traditionally been based scarcely mention the late second millennium cultures of the south. Archaeology nevertheless makes it clear that the Yangzi region was home to cultures no less civilized than their northern contemporaries. Southerners probably learned the art of bronze casting from the north, and with it the manufacture of small clapper bells, but they quickly modified the northern bells to produce more sophisticated and vastly larger instruments.[4]

The first modification was to eliminate the clapper: the bell was enlarged, turned upside down, and converted into a mallet-struck bell with a stem for mounting (fig. 2.15). Perhaps the change was made so that the player could choose his strike point; perhaps someone had noticed that to obtain the nicest sound from an almond-shaped bell it should be struck dead center. The bell in figure 2.15, which dates from about 1300 B.C., owes nothing to the Erlitou bell except its cross section (if indeed that). It is 45.3 centimeters high and weighs 22.6 kilograms, greater size giving it a greater volume of sound. In the next few centuries, stemmed bells were made in large numbers throughout the middle and lower Yangzi region, and some of them were enormous. An example

Fig. 2.15 Bell of the type *nao* from Xin'gan, Jiangxi Province. Thirteenth century B.C. Bronze. Height 45.3 cm, weight 22.6 kg. After *China Pictorial* 1992, 5:32.

Fig. 2.16 *Nao* from Ningxiang, Hunan Province. Twelfth or eleventh century B.C. Bronze. Height 71 cm, weight 67.25 kg. After *Konan-shō* 1981: pl. 27.

unearthed in Ningxiang County in northern Hunan Province, from perhaps the twelfth or eleventh century B.C., measures 71 centimeters in height and weighs 67.25 kilograms (fig. 2.16). Another find in the same county yielded the heaviest bell so far known from ancient China, more than a meter high and 221.5 kilograms in weight.[5] Bronze casting on such a scale required experienced casters, well-equipped foundries, and a prodigious investment in mining and metallurgy.

Although much smaller bells of the same stemmed type have occasionally been found in the north, there they seem to have been curiosities of no great importance to ritual or music. Sets of three are common, but it is not clear whether the sets had pitches spaced at musical intervals.[6] The bells seldom have much decoration, and they are rather rare; they certainly were not standard tomb furnishings. By contrast, the large and lavishly decorated bells so abundant in the south must have served a vital function, but we know far too little about the cultures of the Yangzi region to guess what that function was. Southern bells are often found singly. In instances when two or more have been found together, their sizes vary erratically and their decoration is not matched, and since they do not obviously form musical sets, archaeologists have generally not bothered to measure their pitches. The bell in figure 2.15 comes from a tomb that contained three others, all different; the bell in figure 2.16 was found in a pit with four others, again all different. For neither group have pitches been reported.

At first glance we might suppose that, like most bells outside China, these isolated or unmatched southern bells were not musical instruments but what we might broadly classify as signaling instruments. The latter term conveniently embraces most of the roles that bells have played in the West, roles summarized for instance in Edgar Allan Poe's "The Bells" : Poe writes about sleigh bells, wedding bells, alarm bells, and funeral bells, but he does not mention bells that play music. Bells have never been standard melodic instruments in Western orchestras — Beethoven symphonies do not use bells — and the reason is surely to be found in acoustics. Western bells are circular in cross section, and circular bells have a cloudy, unfocused tone; their pitches are not very well defined. Circular bells also have a lingering sound. In a church bell — a signaling instrument — a lingering sound is an advantage; in music it is rather like a piano with no damper pedal. Unfocused pitch and slow attenuation do not particularly invite musical use.[7]

But these are acoustic properties of circular bells. Bells of almond-shaped section have properties more likely to attract the interest of musicians. They are instruments of well-focused, definite pitch, and they also have faster attenuation than circular bells; their sound dies away fairly quickly. If we ask whether southern bells were signaling instruments or musical instruments, the answer surely must be: at first they were signaling instruments, but they were signaling instruments that happened to have well-defined musical pitches, so at some point someone decided to use one of them with an ensemble, and at that moment, that one bell became a musical instrument. For a single bell to become a musical instrument, the bell did not have to be tuned; the rest of the ensemble tuned to the bell. One bell could not play a melody, of course, but its one sonorous A-tone might still have been very useful. The timpani in Beethoven's orchestra do not play melodies; they supply only two notes, but Beethoven uses them constantly. The musical function of the first southern bells could have been something similar. The spectacular development that led eventually to Marquis Yi's set must have taken place at least partly because of the acoustic properties of the almond-shaped cross section.

Let us try to construct a scenario for the adoption of bells into the ensemble and their conversion from signaling instruments into musical instruments. The scenario has to be speculation, because the crucial steps are events that archaeology will never be able to pin down, but the steps have a certain musical logic. The first bell that was adopted into the ensemble was probably used only for one tone, for its A-tone. The performer would not be able to use the B-tone, at least not in the same piece of music with the A-tone, until the bronze caster had managed to tune the A-B interval, and the caster would have no reason to try to tune the A-B interval in a signaling instrument. The caster would not become interested in that interval until bells were being used for music.

Thus the first step in the scenario is, one bell was adopted into an ensem-

Fig. 2.17 *Nao* from Ningxiang, Hunan Province. Twelfth or eleventh century B.C. Bronze. Height 54 cm, weight 28.5 kg. After *Wenwu* 1997, 12: color pl. 2:1.

Fig. 2.18 *Nao* from Ningxiang, Hunan Province (one of the nine shown in fig. 2.19). Twelfth or eleventh century B.C. Bronze. Height 50 cm, weight 24 kg. After *Zhongguo wenwu jinghua* 1997: no. 48.

ble, and the other instruments tuned to it. Then someone chanced upon another bell that happened to produce a tone at a pleasing musical interval away from the first. If there were lots of bells around — and in the south there certainly were — sooner or later someone would find two that were separated by a major third, or a fifth, or some other musically useful interval. So we can imagine that musicians assembled sets of bells just by hunting around for bells that worked together — not necessarily big sets at first, perhaps just two or three, like timpani. The incentive for doing so must have come from music played by already existing ensembles of other instruments, music that was based on well-defined scales.

But if musicians were doing this — not *casting* sets of bells but *assembling* sets of bells — then we must reconsider those apparently unmatched groups of southern bells found together. The two bells shown in figures 2.17 and 2.18 were found along with eight others, a total of ten bells buried together in one pit (fig. 2.19). The sizes of the ten bells vary irregularly, and there are differences of decoration, but appearances are deceiving. In this case, finally, the archaeologists took pitch measurements, and the measurements reveal that the A-tones of the bells are spaced at musical intervals; in fact, they are spaced very accurately at semitone intervals. Whatever their appearance, the ten bells are not a random assortment. They may not have been cast as a set, but they constitute a musical instrument nonetheless. They are the earliest evidence for the chromatic scale

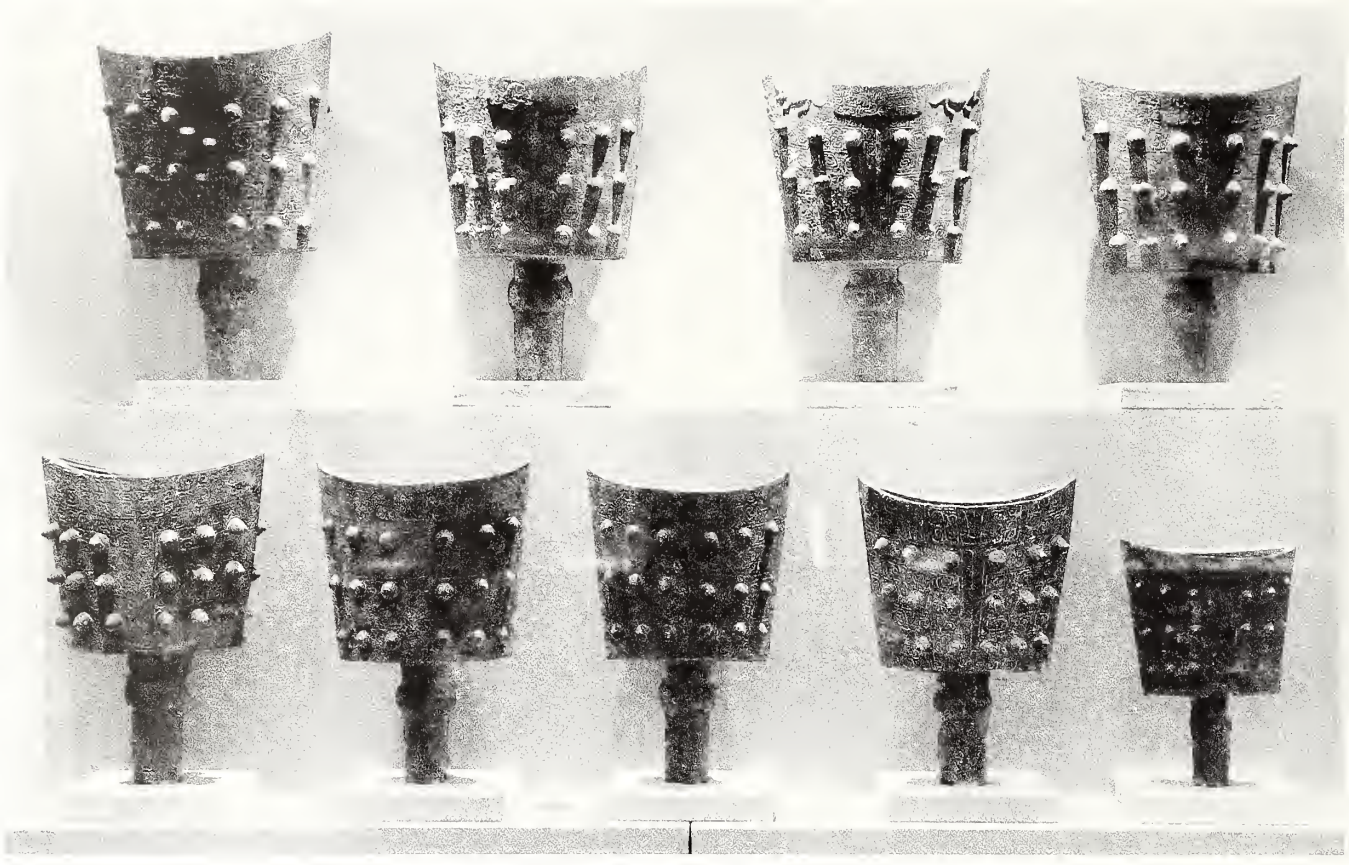


Fig. 2.19 Nine of ten *nao* unearthed together in 1993 in Ningxiang, Hunan Province (the tenth is the bell shown in fig. 2.17). Twelfth or eleventh century B.C. Bronze. Heights from 36.5 to 53.5 cm, weights from 9.5 to 31 kg. The bell shown in figure 2.16 is one of five found together in a pit in 1959; the ten bells unearthed in 1993 were in a pit located twenty meters away from the 1959 find. Photograph by Robert Bagley.

in China and the earliest evidence for bell music anywhere in the world.[8]

The step from heterogeneous assembled sets to sets cast all at once, with matching decoration, is not very large. The moment a musical set had been assembled, a bronze foundry could have cast a new set by carefully copying the old one, one bell at a time. In other words, the first set cast as a set was probably a replica of an assembled set. The replica bells could have been given uniform decoration without shifting their pitches appreciably; on the other hand making their sizes vary smoothly would have been difficult. Even in Marquis Yi's set, the progression in size is slightly erratic. Is this a hint that the casting of tuned sets continued the way it began, by replication of existing sets? Perhaps no foundry was ever able to *design* a musical set of bells. Perhaps every set was modeled on an earlier set, differing only by piecemeal alterations made by casters who, though they had no formula to give them the magnitude of the changes, at least had enough experience to know in which direction the dimensions of a bell should be changed to shift the pitch or the A-B interval in the direction desired.[9]

Like the first assembled sets, the first replicated sets probably did not have musically usable B-tones. With three well-tuned exceptions, the B-tones of the bells in figure 2.19 are randomly pitched. Eventually, however, some caster stumbled on a way of shaping a bell that tuned the A-B interval (he might have been trying to improve the tone color of the A-tone by shifting its harmonics).

Fig. 2.20 Bell of the type *yongzhong*, one of two found together in Xiangtan, Hunan Province. Eleventh or tenth century B.C. Bronze. Height 48 cm, weight 21.5 kg. After Otsu 1985: pl. 10. Detail with rubbing of decoration and B-tone marker below after *Wenwu* 1966, 4:3.

His discovery cut in half the cost of these expensive instruments, giving two notes for the price of one.

When the B-tone came into regular use, bells were modified in a telltale way to make them easier to play. The bell of figure 2.20, dating from about 1000 B.C., exhibits two important changes. First, a little bird appears in sunken line near one corner of the bell. Surely this is a B-tone marker, a marker for the strike point of the B-tone (perhaps it is a bird because birds sing). The second change was to give the bell a small loop at the base of the stem so that it could be turned upside down and hung at a slant. The bells in figure 2.19 were mounted mouth upward, as shown, and in that position their strike points were not very conveniently presented to the player. Once B-tones as well as A-tones were in use, the arrangement must have been even less convenient. For a player who needed to strike accurately to sound one tone or the other but not both, it must have been more practical to have bells suspended at a slant, like Marquis Yi's: in figures 2.1 and 2.3, the middle-tier bells tilt toward the players on one side, the lower-tier bells tilt toward the players on the other side. The loop on the stem of the bell in figure 2.20 allowed the bell to be suspended in just this way, with its strike points tilted toward the player.[10]

The developments described so far seem to have taken place in the south between about 1500 B.C. and 1000 B.C. It is not clear that there was any bell music in the north at this early period. By the tenth century, however, sets of southern bells had reached the Zhou empire in the north. Found in tombs and hoards in the Wei and Yellow River Valleys, they bear decoration quite unlike that of the bronze vessels found with them; they are obvious imports, purely southern in style. We know nothing of the transaction that brought them to the north, but it seems likely that such unfamiliar instruments were accompanied by musicians who knew how to play them and thus by whatever music those musicians were accustomed to play. It is possible also that experienced southern bell founders came to the Zhou court. Copies of the imports were soon being made locally, and it is clear that within a generation or two bell music had been adopted into northern ritual, for the copies soon acquired Zhou decoration and

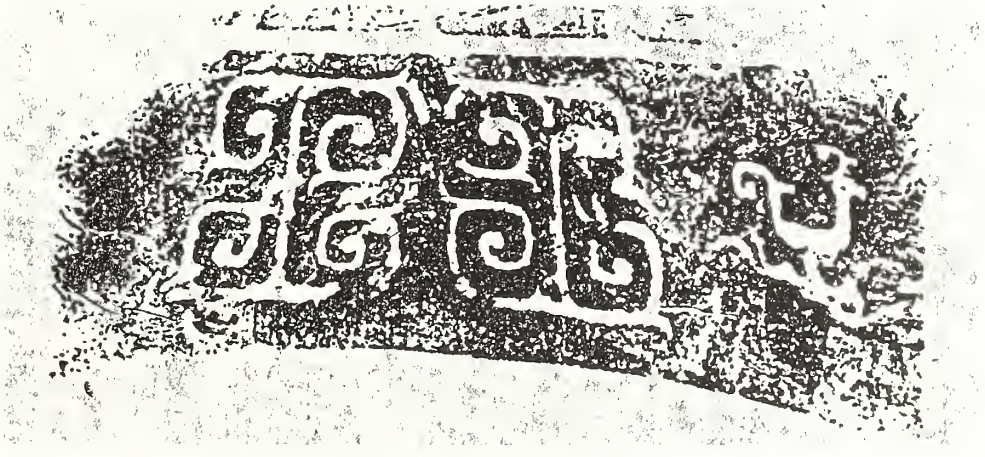


Fig. 2.21 *Zhong Yi yongzhong*, the fifth of a set of eight bells unearthed at Fufeng Qijiacun in the Wei River Valley, Shaanxi Province. Late Western Zhou, ca. 800 B.C. Bronze. Height 32.5 cm, weight 8.5 kg. Zhong Yi is the owner named in the inscription. After *Shaanxi chutu Shang Zhou qingtongqi* 1980: vol. 2, pl. 146.

Zhou inscriptions (fig. 2.21). The inscriptions enable us to visualize Zhou bells in use, something that we cannot do in the case of their uninscribed southern forebears. Ritual feasts of food and wine were offered by Zhou lords to their ancestors using bronze vessels, and while the ancestors feasted, ritual music—perhaps southern music—was played for them on bronze bells.[11]

In the period between the tenth-century arrival of bell sets in the north and the fifth-century manufacture of Marquis Yi's set in the south, the gradual improvement and enlargement of bell sets can be followed in broad outline in northern archaeological finds.[12] If there were parallel developments in the south, as seems likely, archaeology has not so far given us much trace of them. In some features, such as the layout of their decoration, the distribution of their pitches, and the musical terminology of their inscriptions, Marquis Yi's bells seem indebted to or at least in touch with northern developments. Yet it is difficult to escape the suspicion that they owe something also to ancestors nearer home. Their decoration is unmistakably local, and their long tone-defining inscriptions give us tantalizing glimpses of a sophisticated musical culture in the southern state of Chu. We must hope that archaeology will someday tell us much more about the history of bell sets in the south.

MUSICAL SCALES

Let us turn now to the question of what sort of music Marquis Yi's bells played. Bell music is likely to have been ensemble music, if only because the first sets of bells were too small to play melodies unassisted, but beyond this we cannot say very much. Ancient musicians may never have had any occasion to commit their repertoire to writing, and in the absence of anything resembling a musical score, Zeng instruments cannot tell us much about Zeng music (archaeologists of the future could not reconstruct Beethoven's Ninth by examining the instruments of the Vienna Philharmonic). Replicas have been made of all the instruments in Marquis Yi's tomb, and the Hubei Provincial Museum has formed an ensemble to play the replicas, but the ensemble has no ancient music to perform. It is fascinating to watch and listen to, but it cannot give us much more than an idea of the ancient ensemble's sound quality.

Nevertheless the uniquely rich evidence from Marquis Yi's tomb does tell us a good deal about musical scales. When bells are found in playable condition, acoustical physicists can measure their pitches; the bell in figure 2.21, for example, is one of a playable set of eight. Sets from the eighth century B.C. generally supply four notes per octave; by the sixth century sets were made that can supply five or six or even seven notes per octave; and Marquis Yi's set, from the fifth century B.C., plays all twelve notes of the chromatic octave. These pitch measurements are very suggestive; they hint at changes in music, or at least in

the musical role of bells. But they do not translate automatically into information about musical scales. Knowing the pitches available in a set of bells tells us what notes the bells could contribute to the music of the ensemble, but it does not tell us what scale that music was based on. It is thus extremely interesting that the Zeng bell and chime-stone inscriptions identify for us the scale that Marquis Yi's music actually employed. Whatever notes were available on the various instruments of the Zeng ensemble, the inscriptions give us good reason to believe that its music was based principally on one particular five-note scale, the anhemitonic pentatonic scale.

This ponderous name describes something very simple. A pentatonic scale is any scale with five notes per octave; the word "anhemitonic" singles out a pentatonic scale in which the five notes have a particular spacing, the spacing of the black keys on a piano. A piano keyboard has five black keys per octave, and as it happens, the black keys form a pentatonic scale exactly like the one that was used in the state of Zeng. (The scales most familiar to us from our own music are seven-note scales: the piano has seven white keys per octave, and if those are played starting on C and ascending, the result is a C-major scale.) Of course, pentatonic music is not confined to the black keys of the piano. Any key, white or black, can be taken as the starting point for any scale; transposed to another starting point, the scale represented by the black keys remains an anhemitonic pentatonic scale as long as the intervals are not changed. Our seven-note major scales are described by the familiar syllables *do-re-mi-fa-sol-la-ti-do;* the pentatonic scale used in Zeng was *do-re-mi-sol-la-do.* We can at

Fig. 2.22 Thirty-two chime stones (limestone; replicas), gold-inlaid bronze rack, and mallet from the tomb of Marquis Yi of Zeng. Height 109 cm, width 215 cm. Hubei Provincial Museum. Photograph by Hao Qinjian. (See fig. 2.23; see also Checklist no. 4.)

Fig. 2.23a Four chime stones from the tomb of Marquis Yi of Zeng. Calcareous limestone. Lengths from 29.8 to 45.3 cm. Hubei Provincial Museum. Photograph by John Tsantes.

Fig. 2.23b Chime stone from the tomb of Marquis Yi of Zeng (second from the left on the upper bar of the rack in fig. 2.22), showing inscriptions on side and lower edge. Length 40 cm. The inscription on the side reads "*Do* of *zhuo*-Guxian [the pitch standard a semitone below Guxian]." Hubei Provincial Museum. Photograph by John Tsantes.

this point dispense with the word "anhemitonic" on the understanding that the only pentatonic scales of concern to us are scales spaced like the black keys on a piano.

The inscriptions of Marquis Yi's bells show in several different ways that pentatonic scales were basic to Zeng musical thinking, but the most elegant piece of evidence comes not from the bells but from the chime stones (fig. 2.22). These were suspended on a bronze rack and played with two mallets, probably by one performer. The rack is visible in figure 1.3, at the far end of the chamber, parallel to the short arm of the bell stand (it is 109 centimeters high, less than half the height of the bell stand). The stones were not found in playable condition (modern replicas have an attractive ringing sound), but their inscriptions tell us their pitches (figs. 2.23a, b). The set spans three and a half octaves in an unbroken chromatic sequence; in other words, it includes all twelve notes of the octave.

The stones were found suspended on the rack, as in figure 2.22. When they were not being played, however, they were kept in a set of three custom-made boxes that were also found in the tomb. The boxes have fitted, numbered slots to show which stone goes where, and if we return the stones to the boxes, we

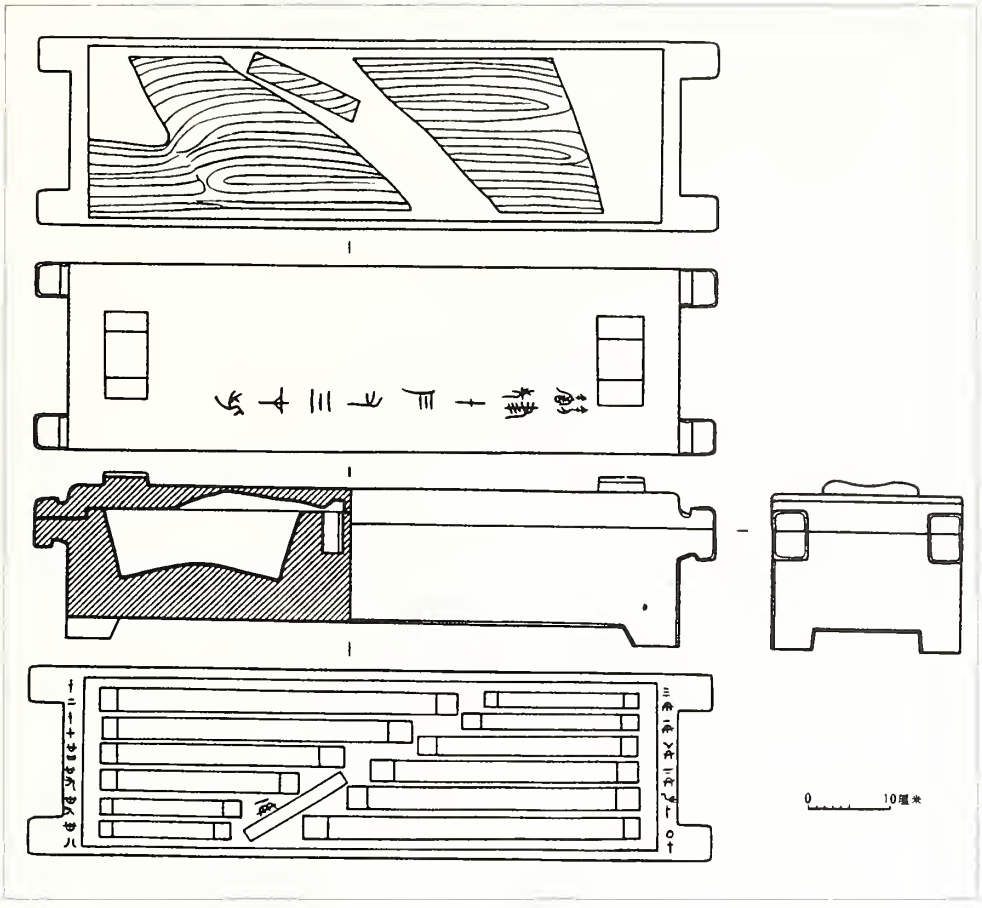


Fig. 2.24 Drawing of one of three lacquered wood boxes for chime stones from the tomb of Marquis Yi of Zeng. Length 81.2 cm, height 32 cm, width 24 cm. After Huang Xiangpeng 1996, Hubei: 261. The box and its lid were each hewn from a single piece of wood, then lacquered black. (See also Checklist no. 4.)

discover that the first box (fig. 2.24) contains a pentatonic set starting on C; the second box contains a pentatonic set that starts half an octave away on F-sharp, which means that it does not share any notes with the first set; and the third box contains the rest of the notes needed to fill out the chromatic scale. Moreover — using a terminology to be introduced in a moment — the three boxes are labeled "C," "F-sharp," and "extras." The set of chime stones was thus conceived as two nonoverlapping pentatonic sets plus the extra notes needed to fill out the chromatic scale. Why bother to fill out the chromatic scale? Because the musician could then play a pentatonic scale starting on any note, not just C or F-sharp. In fact, when the tomb was opened, thirty-two of the forty-one stones were displayed on the rack, as seen in figure 2.22, and the stones on the top bar supplied a pentatonic scale starting on B, the stones on the bottom bar a pentatonic scale starting on G. (Some of the notes needed for the scale on G had already been used for the scale on B, so the lower bar of the rack was filled out with stones irrelevant to both B and G.) Obviously the chime-stone player selected different stones and set up the chime differently whenever he wanted to play a tune using a different pentatonic scale.

Nothing tells us so much about Zeng music as this set of chime stones. Sometimes the player used a pentatonic scale starting on C, sometimes he used a pentatonic scale starting on F-sharp, sometimes he used a scale starting on some

other note, but since he had to set up the chime stones differently to play different scales, he must not have been switching from one scale to another in the middle of a tune. If he had been content with two pentatonic scales for all the music he played, he would have had no need for a set of forty-one chime stones; the C and F-sharp sets could have been permanently displayed on the rack. If on the other hand he had required several different pentatonic scales in the course of a single piece of music, it would have been easy enough to build a rack that would hold all forty-one chime stones simultaneously. Thus he apparently did not need to modulate between tonalities (though we cannot exclude shifts between the scales on the upper and lower bars of the rack), but he clearly did wish to be able to transpose, if only to accommodate the vocal compass of singers. As we will see, the same concern for transposing is evident in the bell inscriptions. It suggests the interesting possibility that chromatic division of the octave was arrived at by instrument makers — makers of chime stones, for instance — told to provide for all possible transpositions of the pentatonic scale.

Knowing that Marquis Yi listened to pentatonic music in which modulation between tonalities played little role does not, unfortunately, bring us very close to knowing what Zeng music sounded like. A great many different tunes can be played on the black keys of a piano. But to be able to say anything at all about music two thousand five hundred years old is remarkable.

THE TONE-DEFINING INSCRIPTIONS

If we return now to the set of bells, we might suppose that it has twelve notes to the octave for the same reason as the chime stones — because the marquis of Zeng wanted his bells to be able to play complete melodies in all the different pentatonic tonalities. But a number of considerations suggest otherwise. For one thing, bells were vastly more expensive than other instruments; the dense scaling of Marquis Yi's set represents unparalleled extravagance. For another, unlike the set of chime stones, the bells could not be rearranged to suit the needs of the moment; whatever their versatility in the abstract, their physical arrangement gives clear priority to pentatonic scales on C. Finally, and most importantly, the gold-inlaid inscriptions remind us that the bells were meant to be seen as well as heard. Even without their inscriptions they would have awed any visiting ambassador. Sets of bells from other tombs occasionally have tone distributions so erratic as to suggest that spectacular display was their chief or indeed sole function (for example fig. 2.25). The visual impact of Marquis Yi's bells must have been at least as important to him as their audible contribution to his music, and that impact undoubtedly was focused and given some very specific meaning by the tone-defining inscriptions.

To examine these inscriptions we should begin with the bells in the upper

Fig. 2.25 Group of thirty-six bells from Tomb 2 (displayed on a modern stand; the suspension devices are also modern). Bronze, lacquered wood. The largest bell is 96.3 cm high and weighs 79.5 kg; the smallest is 30 cm high and weighs 4.5 kg. Suizhou City Museum, Hubei Province. Photograph by John Tsantes. (See also Checklist no. 2.)

tier, the bells that seem not to have been played, for their inscriptions are the simplest. Figures 2.26 and 2.27 show the front and back of an upper-tier bell. On the front, the two strike points are labeled with solmization syllables: the A-tone of the bell is labeled *sol*-flat, the B-tone is *la*. On the back, nothing is said about the B-tone, but we are told something interesting about the A-tone: it is "*do* of Guxian." How should we interpret this? *Do,* as in *do-re-mi,* is the first note of the scale; let us guess that Guxian is the name of a scale, the name of the pitch that the scale begins on (it is, in fact, the label of the chime-stone box that contains the pentatonic set on C). On that hypothesis, an inscription that says "this is the first note of the scale when the starting pitch is Guxian" would seem to mean "the A-tone of this bell *is* the pitch Guxian." In other words, the bell is a pitch standard.

Nine bells on the upper tier have A-tone inscriptions like this one, differing only in starting-pitch name, and if we arrange the nine bells in order of size and transcribe their inscriptions, we obtain a sequence of nine equally spaced pitch standards. The inscriptions say "this is *do* when the starting pitch is Wuyi, this is *do* when the starting pitch is Huangzhong, this is *do* when the starting pitch is Taicou," and so on; all nine are listed in figure 2.28. It looks as though these nine bells were intended to form a display of the pitch standards of the state of Zeng, and if we measure their A-tones, or if we simply consult the solmization syllables on their strike points, we will discover that the nine standards are spaced at whole-tone intervals (intervals of two semitones): they span an octave and a half. We might imagine that when a chorus in the state of Zeng warmed up, the chorus master banged on the first bell and shouted "Wuyi!"

Fig. 2.26 Bell U2–5, front view (A- and B-tone labels *sol*-flat and *la*). Bronze. Height 34.3 cm. Hubei Provincial Museum. Photograph by John Tsantes.

Fig. 2.27 Bell U2–5, back view (A-tone definition "*do* of Guxian"). Hubei Provincial Museum. Photograph by John Tsantes.

whereupon the chorus sang "*do-re-mi-sol-la-do*"; then he shouted "Huangzhong!" and the chorus sang "*do-re-mi-sol-la-do*" again, starting a whole tone higher.

The inscriptions of the bells lower down, the bells that were played, have the same basic structure: they define tones using the same formula, combining a pitch standard with a solmization syllable. But these definitions are longer, and they differ in several ways. First, definitions are given not just for A-tones but also for B-tones: figure 2.13 is a B-tone definition. Second, the inscriptions give several definitions for each tone. The definition in figure 2.13 says "this is *mi* when the starting pitch is W, it is *re* when the starting pitch is X, it is *do* when the starting pitch is Y, and it is *sol* when the starting pitch is Z." That is rather like saying "in C-major this bell supplies the first note of the scale, in F-major it supplies the fifth," and so on. A musician would say that we are being told how this particular note functions in different tonalities. Or to look at it another way, we are being told how to transpose.

But there is a surprise here. The translation just given said "when the starting pitch is W, X, Y, Z" because these starting pitches, the pitch standards named in figure 2.13, are not the pitch standards of the state of Zeng, they are the pitch standards of the state of Chu. Moreover the state of Chu uses twelve pitch standards at semitone intervals, not nine pitch standards at whole-tone intervals (see fig. 2.28). When we go through all the inscriptions on all the bells, what we find is this: with a single exception, all the bells in two of the middle-tier subsets

use the Chu pitch standards. The exception uses the Zeng standards, as do all the bells of the third subset and most of the bells on the bottom tier. And the inscriptions that use the Zeng standards have an astonishing feature: whenever we come to a bell which produces a tone that coincides with one of the Zeng pitch standards, the inscription defines the tone using the Zeng standard — and then it pauses to tell us what that Zeng standard is called in Chu. In other words, it says "this is *do* on such-and-such a Zeng pitch standard," and then it tells us the Chu name for that standard. It is as though Zeng terminology has to be footnoted! Occasionally the footnotes tell us what the Zeng standard is called in other states too, including the Zhou state in the north, but it is only the states of Zeng and Chu that clearly have extended sets of pitch standards.[13]

The inscription in figure 2.29 contains one of these extraordinary footnotes. It begins with a perfectly normal A-tone definition using a Zeng pitch standard: it says "this is *do* when the starting pitch is Suibin." Then it adds: "Suibin's name in Chu is Pinghuang, in Shen its name is Yize." With that peculiar bit of international relations out of the way, it continues: "this is *mi* when the starting pitch is Taicou, it is two major thirds above *do* when the starting pitch is Wuyi, it is a major third above *re* when the starting pitch is Huangzhong."

Fig. 2.28 Pitch standards of Zeng and Chu, as inferred from the tone-defining inscriptions of Marquis Yi's bells.

Pitch standards of the state of Zeng Spaced at intervals of two semitones over an octave and a half, starting with Wuyi (~F#).		**Pitch standards of the state of Chu** Spaced at one-semitone intervals, starting with Luzhong (~C), which was probably also called Guxian.
Xuanzhong	~C	
		zhou-Guxian
Muyin		Muzhong
		zhou-Muzhong
Yingyin		Shouzhong
		zhuo-Shouzhong
Yingzi	~F#	Xinzhong
		zhuo-Xinzhong
Hanyin		Wenwang
		zhuo-Wenwang
Suibin		Pinghuang
		zhuo-Pinhuang
Guxian	~C	Lüzhong [=Guxian]
Taicou		
Huangzhong		
Wuyi	~F#	

Fig. 2.29 Bell 11–2, A-tone definition. After Rao and Zeng 1985: pl. 13.

The reader who finds these inscriptions bewildering should draw comfort from the knowledge that the experts are no less bewildered. What is going on here? Who wrote these inscriptions, and for what purpose, and to whom were they addressed? No one knows. Sooner or later every significant question that we might ask about this set of bells — the history of its assembly from smaller sets, the intentions of its designers (was a chromatic scale their objective, or was it the accidental by-product of some other concern?) — leads us back to the problem of the inscriptions, for which no one has a solution. But one point seems to stand out. Clearly the marquis of Zeng wished to exhibit the relationship between Zeng musical terminology and Chu musical terminology in a spectacular way. Why? Surely not for any reason connected with music making.

His musicians did not need to be told, in beautiful gold-inlaid calligraphy, the Chu names for Zeng pitch standards.

Perhaps the most plausible guess is that the significance of the inscriptions, and thus of the bells themselves, lay somewhere in the realm of extramusical associations of musical scales, perhaps in associations inspired by the seemingly magical connection between music and mathematics. In the West, tradition credits Pythagoras (sixth century B.C.) with discovering the role of number in music. If a string under tension is plucked, a note of some particular pitch is heard; if half the length of the same string under the same tension is plucked, it sounds an octave above the first note; if two-thirds the length is plucked, it sounds a perfect fifth above the first note; and so on. Mysteriously, the most pleasing consonances are given by the simplest numerical ratios. This observation impressed European thinkers from Pythagoras and Plato all the way down to Kepler. It was long supposed, for instance, that the radii of the orbits of the planets should form simple numerical ratios, and that the movement of the planets should produce music. Astronomers today no longer believe in the music of the spheres, but physicists are still intrigued by the connection between nature and mathematics. In his celebrated lectures on physics, Richard Feynman remarks that outside geometry Pythagoras's discovery was the first occasion when numbers were found to be intrinsic in any natural phenomenon.[14]

Though we cannot be certain that the relationships we associate with Pythagoras were known at Marquis Yi's court, the theoretical sophistication of his musicians taken together with their experience of highly developed stringed instruments would seem to make it likely. By the first century B.C. we have abundant evidence that Chinese thinkers were impressed by the numerical regularities of musical scales.[15] Philosophical texts of that time say for instance that the ideal system of weights and measures should be based on the pitches of ritual bells; the basic unit of length should be the length of the pitch pipe that played the same note as a certain bell. Numerology of this sort opens up the possibility of connecting musical scales with almost anything. Since the Zeng inscriptions make equations between the pitch standards of different states, we might guess that their meaning was somehow connected with the interstate political order. Some philosophically inclined music theorist, some Zeng equivalent of Pythagoras, must have talked the marquis of Zeng into spending a fortune on embedding a political message in an absolutely unique set of bells. But just what that message was escapes us.

Curiously, no set of two-tone bells, good or bad, is known more than a century after Marquis Yi's time. On present evidence, his bells represent the climax of a millennium-long tradition of bell founding that was rapidly approaching its demise. Perhaps the catastrophic wars of the late Zhou period destroyed foundries and expertise; or perhaps the two-tone bell was deliberately rejected by casters who found the B-tone inferior in tone quality or too difficult to tune.

For whatever reason, bells made in later times did not exploit the two-tone phenomenon, nor do they seem to have been of particularly high musical quality.[16] Bells were regarded as essential to the performance of Confucian ritual throughout later Chinese history, but no set that has come down to us from any period approaches Marquis Yi's in acoustic sophistication or artistic splendor.

Notes

ACKNOWLEDGMENT: The author would like to thank Nicholas Brooke for his comments on a draft of this essay and for helpful musical discussions.

1. For bells in the ancient Near East, see Price 1983: 57–65 and Appendix A; for bells, bell music, and carillons in Europe, ibid.: Chapters 4–8.

2. Because it corresponds exactly to the system employed in the Zeng inscriptions, I use here what is called a movable-*do* solmization system. In fixed-*do* solmization, the syllables *do-re-mi,* etc. are treated instead as absolute pitches, equivalent to C-D-E, etc.

3. For detailed discussion, see Falkenhausen and Rossing 1995: 448–79.

4. On early Bronze Age archaeology, see Loewe and Shaughnessy 1999: Chapter 3; for the Yangzi region in particular, see Loewe and Shaughnessy 1999: 171–75, 208–12.

5. *Wenwu* 1986, 2: 44–45; Ma Chengyuan 1997: 133 (no. 142; there incorrectly dated to Eastern Zhou).

6. Tone measurements for one set of two bells and eight sets of three are reported by Huang Xiangpeng 1996, Henan: 69–78. Eight of the nine sets are from Anyang. None of the nine seems to have any very musical tuning, lending support to Falkenhausen's view that northern bell sets were only jangling noisemakers (Falkenhausen 1993b: 228–29). Though Li Chunyi tentatively identifies musical intervals in a few northern sets, he mentions also that none of the bells he discusses shows any trace of fine-tuning by grinding on the interior wall, an observation that seems to argue against a concern for specific pitches (Li Chunyi 1996: 116, 118–21).

7. The acoustic behavior of the various kinds of circular bells (church bells, carillon bells, handbells) is a complex subject. See Pierce 1983: 89, 91, 183–85; and for more detail, Falkenhausen and Rossing 1995: 448–53.

8. All the A-tones lie in the octave immediately above middle C; three pitches are duplicated. The excavation report (*Wenwu* 1997, 12: 16–27) excludes the bell shown in figure 2.17 from the musical set on the ground that it is too different from the others in decoration (hence its absence from figure 2.19), but this is illogical: the tenth bell is perfectly in tune with the others, and its musical utility depends on its pitch, not its decoration.

9. Note Lehr's speculation that early Dutch carillon makers began by copying older bells selected for their attractive tone (Lehr 1987: 37), and see also the comments on scaling in Falkenhausen and Rossing 1995: 469–70. It must be added that replication of existing bells could not have been a strictly mechanical business: since molten bronze shrinks on solidification, the bronze founder would have had to compensate in some way for the shrinkage if his copy was to match the original in pitch.

10. For the suggestion that the changes illustrated by the bell of figure 2.20 were prompted by use of the B-tone, see Falkenhausen 1993b: 153–54.

11. On the transmission of southern bells to the north, see Loewe and Shaughnessy 1999: 427–30. On inscriptional evidence for the role of music in Western Zhou ritual, see Falkenhausen 1993a: 146–52.

12. Falkenhausen and Rossing 1995: 465–79.

13. Interestingly, Marquis Yi's chime stones are labeled using Chu standards, not Zeng standards.

14. Feynman et al. 1963: Section 50–1. On the philosophical ideas attached to musical scales in the West, see Sadie 1980, s.v. "music of the spheres."

15. See DeWoskin 1982, especially Chapters 4 and 5. (Mentions of the Zeng bells in this book rely on an inaccurate preliminary report and should not be trusted.)

16. See Falkenhausen and Rossing 1998.

THREE | Strings

BO LAWERGREN

Archaeologists have recently discovered the ancestors of modern Chinese zithers. Four types of instruments dating back to the late first millennium B.C. exhibit provincial variety as well as foreign influences (fig. 3.1). These findings deeply affect our understanding of China's earliest-known musical culture.

The *se* is the largest zither, and, with about twenty-five strings, the one with the widest compass. Its flat, rectangular box is often elaborately decorated, and examples recovered from Marquis Yi's tomb are among the most sumptuous (figs. 3.2, 3.3). Although prominent in classical literature, the instrument virtually disappeared by the beginning of the first millennium A.D.

The *qin* is much smaller. It, too, was frequently mentioned in classical literature, but it gained even more prestige following the end of the Han dynasty (206 B.C.–A.D. 220) and became the favorite instrument of the gentleman-scholar. Its late–Bronze Age, ten-stringed ancestor (figs. 3.4a, b) shows that the instrument underwent major changes during the first centuries A.D. Since then, the instrument has remained essentially unchanged.

The *zhu* is a long, slim instrument with about five strings (fig. 3.5). Pictorial representations from the Han dynasty show that the strings were struck with a stick rather than plucked. It was rarely mentioned in classical literature and completely disappeared thereafter. All the above three types have been recovered from the tomb of Marquis Yi of Zeng at Leigudun, Suizhou, Hubei Province.

The fourth type, not included among the marquis's instruments, has been found only along the eastern coastal provinces (see fig. 3.11). It resembles the *zheng* that is still played today, with about fourteen strings spanning a long curved board.

Beijing
Linzi
Changzhi
Xi'an
CHINA
Suizhou
Wu Xian
Shanghai
Wuhan
Jingmen
Guixi Xian
Changsha
Guangzhou
Luobowan
Hong Kong
qin
se
zheng
zhu
tuning key

Preceding page: detail from lacquered coffin showing fabulous creature playing a *zhu*. Mawangdui Tomb 1, Changsha, Hunan Province. Ca. 168 B.C. After Fu Juyou and Chen Songchang 1992: 11.

Before discussing the ancient instruments, we should note some general characteristics of Chinese stringed instruments. First, the strings of ancient instruments stretch along a wide soundboard — a fact that defines them as zithers.[1] Second, present-day zithers ("classical instruments") acquired their shape during the first half of the first millennium A.D. and have changed little until this century. And third, Chinese zithers use two methods of fine-tuning: adjustments of string lengths by movable bridges such as in the *se* (fig. 3.3) or of string tensions by tuning pegs such as in the *qin* (see fig. 3.4a).

Bridge tuning is used on the *se* (see figs. 3.3, 3.6.3). First the strings are stretched between fixed bridges until they acquire similar pitches.[2] Then a movable bridge is inserted under each string to shorten its vibrating length and raise its pitches. Peg tuning is seen on the classical *qin* (see fig. 3.8.4). Its seven strings have approximately the same length and tension but different thickness made up of 48, 54, 64, 72, 81, 96, and 108 silk threads.[3] This graduated set yields a pentatonic scale, which is fine-tuned by pegs.

Chinese tuning pegs differ radically from Western ones.[4] On violins and guitars the string meets the peg, called a "lateral peg," at a right angle and winds around its periphery. But on the *qin*, each string is tied to a twisted, thick cord that passes through a channel along the axis of the peg, called an "axial peg" (see fig. 3.9.1e). While in the channel, the cord exits a side opening, loops around the outside of the peg, and returns to the channel through the same hole. This arrangement binds the peg to the lower end of the cord, while the top end is fixed against the bridge. When the peg is turned, the cord twists more tightly, and its effective length shortens. This pulls the string, increases its tension, and raises the pitch.

THE *SE*

The first extant *se* was unearthed in 1935 near Changsha, Hunan Province, and more than seventy have since been found in controlled excavations.[5] Marquis Yi's tomb alone yielded twelve. All instruments consist of a hollow rectangular box with a slightly vaulted top and a flat board covering the underside. The latter has one fist-sized hole at each end. These facilitate the attachment of strings and act as sound holes, familiar from Western instruments (such as the round hole on guitars or *f*-hole on violins), where they serve to extend the resonating properties of the hollow box. Here, the effect may be less prominent since the top surface — the soundboard vibrated by the strings — is thicker than on Western instruments (ca. 15–25 mm versus 5 mm).[6] As a result, the *se* probably vibrated less and radiated weaker sound.

Fig. 3.1 Map showing distribution of different types of zithers and tuning keys from archaeological contexts in China. Map by Li Xiating, redrawn by Gene Thorp.

Se-zithers can be up to 2.1 meters in length, but the dimensions of those found in the tomb of Marquis Yi (see figs. 3.2, 3.3) are more typical. Because of

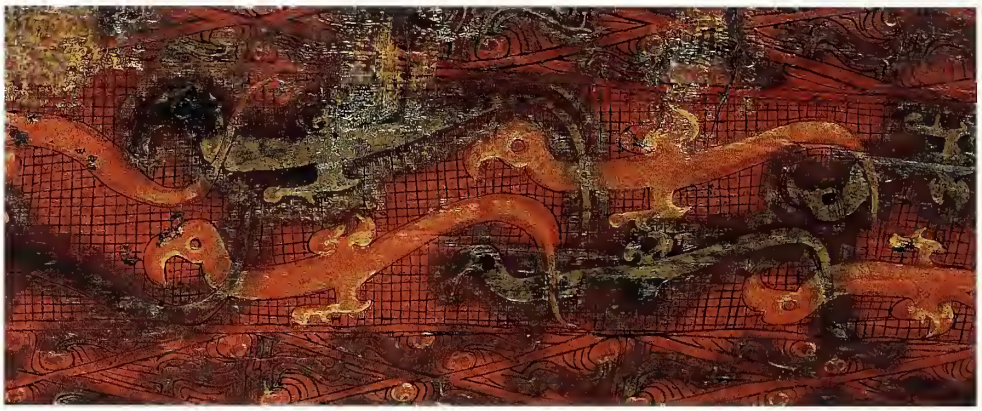


Fig. 3.2 Twenty-five-stringed *se*-zither, with two details of painted designs along the sides, from the tomb of Marquis Yi of Zeng, Leigudun, Suizhou, Hubei Province. Fifth century B.C. Carved lacquered wood. Length 167 cm, width 43 cm, depth 12 cm. Hubei Provincial Museum. Photograph by Hao Qinjian. (See also Checklist no. 8.)

detail a (top)
detail b (bottom)

their large sizes, the instruments were often made from several pieces of wood, joined together by carpentry techniques such as dovetailing or the use of dowels or bamboo staples.[7] Ancient *se*-zithers often had extensive carved relief and lacquered decorations. Finds from Marquis Yi's tomb are prime examples (see figs. 3.2, 3.3, details). One end shows a pair of eyelike motifs surrounded by a mass of intertwined snakes carved in high relief. The entire instrument is then covered with lacquer in red, black, and other colors.[8] The sides display alternating blocks of geometric and bird motifs, similar to those on the *zhu* from the same tomb. Some *se*-zithers are painted with figurative motifs that link them with Chu shamanistic rituals. One example comes from Changtaiguan, Xinyang, Henan Province, but only fragments of the painted motifs have survived (see fig. 1.10). The size and amount of decoration on a *se* appear to be related to the rank of its owner.[9] Marquis Yi was buried with twelve sumptiously decorated *se,* whereas a low-ranking official buried at Liuchengqiao, Changsha, Hunan Province, merited only a single small, undecorated *se* covered with black lacquer (fig. 3.6.2).

Fig. 3.3 Twenty-five-stringed *se*-zither, with wooden bridges and detail of carved end, from the tomb of Marquis Yi of Zeng, Leigudun, Suizhou, Hubei Province. Fifth century B.C. Carved lacquered wood. Length 167.3 cm, width 42.2 cm, depth 11.1 cm. Hubei Provincial Museum. Photograph by John Tsantes. (See also Checklist no. 9.)

Some poor tombs had only nonfunctional *se* with small, solid (and presumably mute) bodies.[10]

Se-zithers mostly had from twenty-three to twenty-six strings, but occasionally as few as nineteen or twenty-one.[11] The strings of the *se* span the soundboard, emerging from holes behind the long, fixed bridge seen at the right (uncarved) end of the zither. Each string passes over a movable bridge shaped like an inverted v and continues on to one of three short bridges fixed near the left end (see figs. 3.3, 3.6.3). The short bridges are at different distances from the long bridge, the two outer ones being slightly nearer to it than the middle one. The strings descend into the interior through holes behind the short bridges, pass around the left (carved) edge, and up again to the top, where they are tied to string anchors (*se rui*).[12] Most *se* have four anchors (see figs. 3.2, 3.3, 3.6.1–3), but some may have as few as two and as many as five.[13] The three-sectioned bridge separates the strings into three sets, often divided as 9–7–9, 8–7–8, 9–6–9, or 7–5–7. Each string is tuned by sliding the movable bridge along the soundboard. A *se* player would kneel and pluck the strings at one end,

Fig. 3.4a Ten-stringed *qin*-zither and replica tuning pegs, from the tomb of Marquis Yi of Zeng, Leigudun, Suizhou, Hubei Province. Fifth century B.C. Carved lacquered wood. Length 67 cm, width 19 cm, depth 11.4 cm. Hubei Provincial Museum. Photograph by John Tsantes. (See also Checklist no. 14.)

Fig. 3.4b View of *qin* with top and bottom separated and replica tuning pegs in place. Photograph by John Tsantes.

Fig. 3.5 (opposite) Five-stringed *zhu*-zither, with two details, from the tomb of Marquis Yi of Zeng, Leigudun, Suizhou, Hubei Province. Fifth century B.C. Carved lacquered wood. Length 115 cm, width 7 cm, depth 4 cm. Hubei Provincial Museum. Photograph by Hao Qinjian. (See also Checklist no. 15.)

keeping the end with the string anchors to his left (see fig. 1.6).

Of Marquis Yi's *se*-zithers only the bodies survived, but a complete set of strings and movable bridges was found *in situ* on a *se* from the early-second-century B.C. in Tomb 1 at Mawangdui, Changsha, Hunan Province (see fig. 3.6.3).[14] This instrument has three pieces of thin cloth wrapped around the strings near the anchors to serve as vibration dampers. Since the intact strings provide information on both thickness and length, they furnish crucial evidence on pitches. Each of the three sets of strings delimited by the short fixed bridges show strings with graduated gauges. Moreover, the placement of the movable bridges yields progressive sequences of string lengths. The outer sets 1 and 3 (see fig. 3.6.3) are identical, with the thinnest and shortest string placed nearest the player and the thickest and longest string farthest away. The middle set consists of much thicker strings, with the thinnest equal to the thickest in sets 1 and 3. With gradually increasing lengths and diameters, the strings of the outer sets must have given descending scales in the direction away from the player. Without information on tensions, however, one cannot determine the exact scales, but those of the outer

detail a

detail b

sets would have been quite similar. Since the movable bridges under the middle set had been disturbed, the pitches are uncertain, but the tessitura must have been lower than for the outer sets, because its strings are thicker and longer. Li Chunyi proposes a pentatonic scale (fig. 3.7). Although details remain unclear, it is nevertheless obvious that the strings in sets 1 and 3 offered the possibility of playing treble tunes in unison.[15] Playing strings in set 3 followed by set 2 allowed tunes that extend from treble to bass registers. Most likely, the same arrangement was used on other ancient *se,* since the strings were always divided into three sets with matching numbers in the outer sets.

Some aspects of the *se*'s scale structure are also evident on the set of sixty-five bells from Marquis Yi's tomb. It contains several chimes, each providing a contiguous system of pitches (see Chapter 2). The middle tier contains three chimes that ascend from a pitch near middle C. Two of these chimes (M1 and M2) have nearly identical pitch sequences. The third (M3) is considered to be the upper continuation of the base chimes on the lower tier (L1 and L2). The upper tier has two sets (U2 and U3) that, when combined, also ascend from the vicinity of middle C.[16] In all, the sixty-five-bell set contains four independent treble chimes, one of which provides the upper extension of the single base chime. Viewed in this way, it has an obvious similarity to the scale arrangements of the *se* (see fig. 3.7).

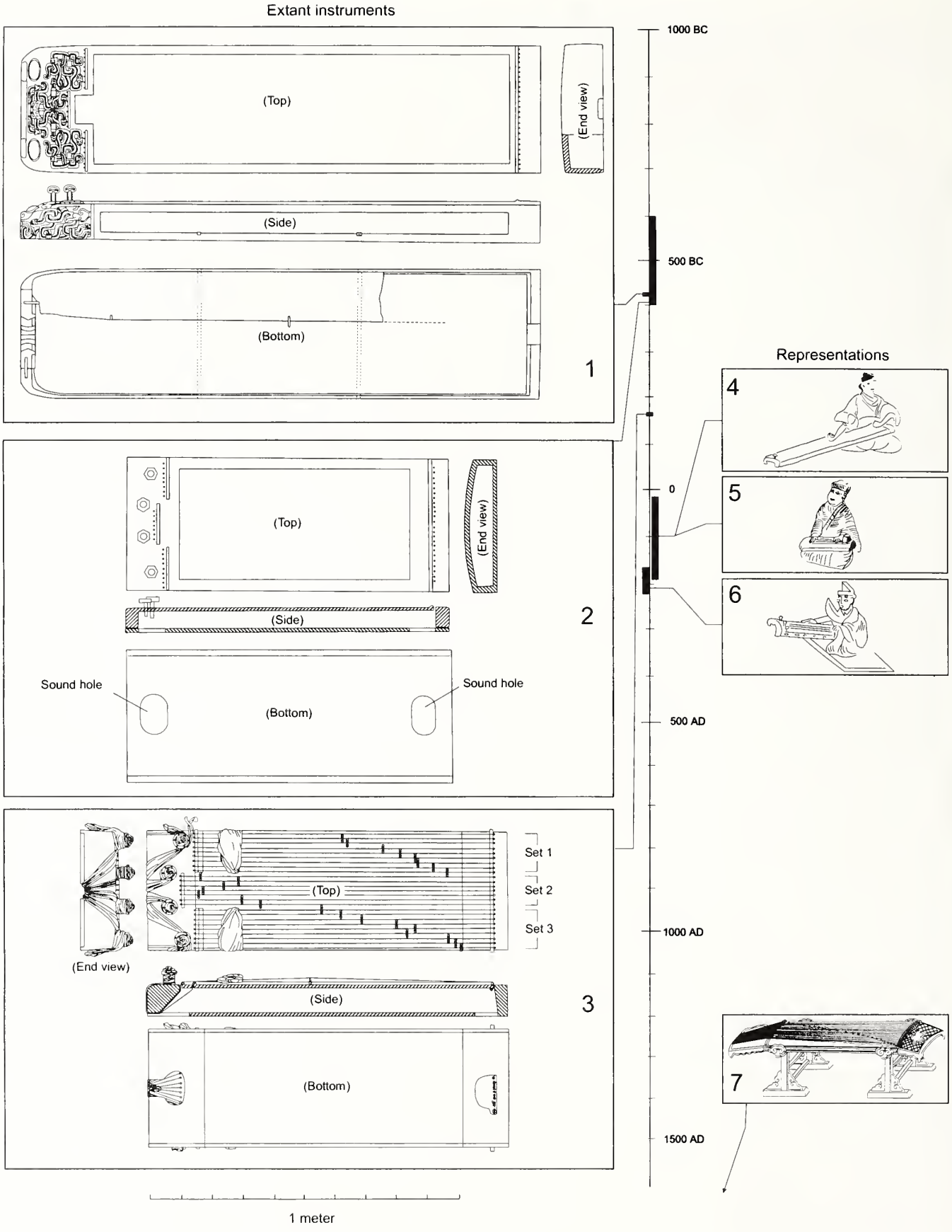

Extant instruments
(Top)
(End view)
(Side)
(Bottom)
1
(Top)
(End view)
(Side)
Sound hole
Sound hole
(Bottom)
2
(End view)
(Top)
Set 1
Set 2
Set 3
(Side)
(Bottom)
3
1000 BC
500 BC
0
500 AD
1000 AD
1500 AD
Representations
4
5
6
7
1 meter

Fig. 3.6 Types of *se*-zithers and their early depictions. All *se* are drawn to scale at bottom and linked to vertical time line at right.

.1 *Se* from the tomb of Marquis Yi of Zeng (fig. 3.2 above). Fifth century B.C. Twenty-five strings. Length 167 cm. After Huang Xiangpeng 1996, Hubei: 275.

.2 *Se* from Liuchengqiao Tomb 1, Changsha, Hunan Province. Late sixth or fifth century B.C. Twenty-four strings. Length 104 cm. After Li Chunyi 1996: 431, fig. 256:2.

.3 *Se* from Mawangdui Tomb 1, Changsha, Hunan Province. Ca. 168 B.C. Twenty-five strings. Length 116 cm. After Li Chunyi 1996: 436.

.4 Tile relief from Dingjiayaodian, Chengdu, Sichuan Province. A.D. first to second century. After Rudolph and Wen 1951: fig. 77.

.5 Stone figure from E'mei Xian, Sichuan Province. A.D. first to second century. Height 57 cm. After Chinese Cultural Foundation 1987: 137, pl. 44.

.6 Tomb relief from Beizhai, Yi'nan, Shandong Province. A.D. second century. After Lawergren 1995–96: fig. 7.

.7 Classical *se*. Length, ca. 200 cm. After Gulik 1969b: fig. 4.

The several overlapping bell chimes — like the overlapping outer string sets on the *se* — allow melodies to be played in unison, or near-unison as in heterophony where each instrument introduces small rhythmic variations on a basic melodic line.[17] According to Confucius, both these techniques were employed: "The music begins in such a manner that all parts sound together [in unison]. Eventually there occurred more freedom [in the performance], but music was still attuned, without interruption, up to the end [of the piece]."[18] A text from the third century A.D. links bells and zithers in yet another way. To tune the bells, Zhou musicians were said to have used a *jun*, described as "a board seven feet long [ca. 162 cm] having a string (or strings)."[19] The required pitches were produced by shortening the *jun* string(s). Some surviving *se* exceed this length and may have served as models for the *jun*.

Se-zithers remained popular throughout the Han dynasty when they were represented on stone and terra-cotta reliefs from different regions (see figs. 3.6.4–6). Some representations are detailed enough to show string anchors (although their quantity may not be reliable). Their plainness and wide variation in size may also be quite representative. The instrument from Mawangdui (see fig. 3.6.3) indicates that Han *se*-zithers had little decoration even in elite contexts. The *se*'s sharp decline after the Han period may be due to changing requirements of ritual music. Perhaps this twenty-five-stringed instrument seemed unwieldy when the fourteen-stringed *zheng* began to gain popularity (see discussion of the *zheng* below). Attempts were made to resurrect the *se* a millennium later, and it lived a shadowy existence in Confucian temples. The shape was altered, the three-sectioned bridge had disappeared, and the string-anchors had been moved to the bottom of the box (fig. 3.6.7).

THE *QIN*

Among the three ancient types of *qin*-zithers known, Marquis Yi's is typical in dimensions and construction (see figs. 3.4a, b, 3.8.1). Compared to the *se*, it is smaller and plainer. Whereas the *se* sound box is composed of separate pieces of wood, the compact body of the *qin* was carved from a single piece of wood. This one-piece construction allows for a thick top and a smoothly curving outer surface. Cavities scooped out of the inside are covered by a separate bottom plate about 2.1 centimeters thick. The D-shaped cavity at the rear end gives access to tuning pegs (see fig. 3.4b). The *qin*'s silhouette visibly separates into a stout sound box with a thin neck. The whole instrument is covered with black lacquer. Ten strings, tied to an anchor under the neck, emerge at the neck and stretch across the body and over a wide bridge where they descend into the box and terminate at the tuning pegs. Because the pegs served to fine-tune the instrument, there was no need for movable bridges.

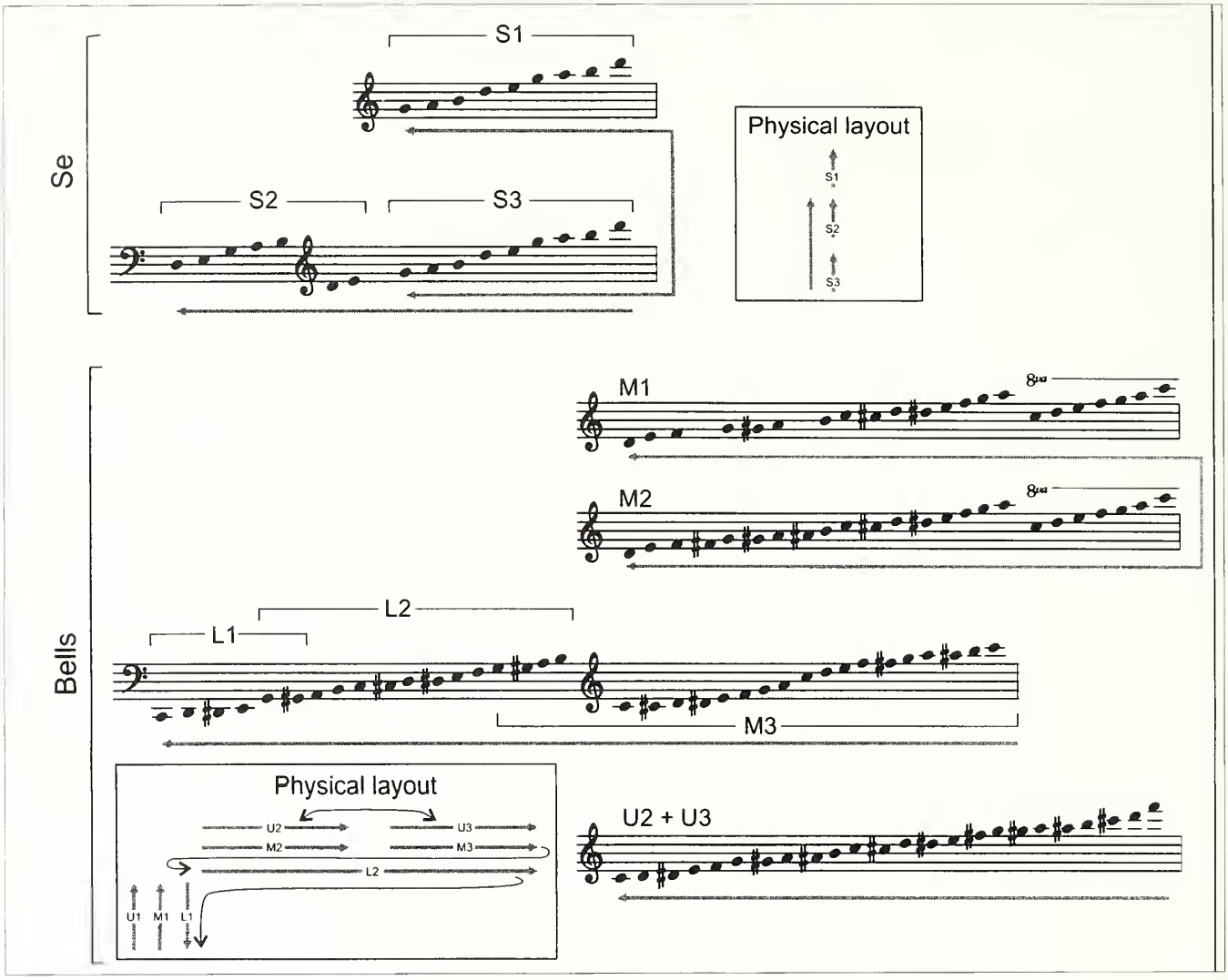


Fig. 3.7 Comparison of tuning systems of the *se* and the sixty-five bells from the tomb of Marquis Yi of Zeng, Leigudun, Suizhou, Hubei Province.
Most bell pitches fall near the indicated notes, but some are as much as a quarter-tone off (Falkenhausen 1993b: 396–99). Arrows are drawn from high to low pitch for each scale or chime. S1 and S3 are notes sounded by the outer sets of strings on the *se*; S2 indicates notes sounded by the middle set. L1, L2 are notes sounded by bells in the lower tier; M1, M2, M3 are notes sounded by bells in the middle tier; U1, U2, U3 are notes sounded by bells in the upper tier.

Slightly later instruments of this kind were first excavated in 1973 from Tomb 3 at Mawangdui, adjacent to Tomb 1, which yielded the *se* discussed above (see fig. 3.8.3). Two others have since been recovered (see fig. 3.8.2 for one example).[20] These four surviving ancient *qin* all come from fifth- through second-century contexts in Chu territory in south central China. This may not necessarily reflect their actual distribution in ancient China, but merely indicates the regions where tomb constructions and/or soil and climate conditions favored the survival of objects made of wood. The number of strings on the ancient *qin*-zithers varies slightly, but the most common is seven, the same as on the classical *qin*. Their very thick soundboards (ca. 48 mm on Marquis Yi's) also anticipate the classical *qin* (ca. 32 mm).[21] Their string counts, thick soundboards, and the use of tuning pegs for fine-tuning all indicate that these ancient instruments are ancestors of the later classical *qin*.

There are, however, noteworthy differences between the ancient and the classical *qin*. The former are smaller, 67–82 centimeters in length compared to the later *qin*'s approximately 120 centimeters. The shape is different: the classical

qin is basically trapezoidal with the narrow end on the player's left (drawn reversed in fig. 3.8.5); the ancient *qin* has a broad box on the right and a narrow neck on the left. Such a combination of neck and body is reminiscent of the lute, a type of instrument unknown in China at this early period. Lutes flourished in West Asia, where they first appeared in Mesopotamia circa 2300 B.C. Their distribution expanded over time, and we find them in Sogdia from the fourth to third century B.C.[22] Other Western stringed instruments also flourished just beyond China's northwestern border. A harp, clearly inspired by West Asian sources but with idiosyncratic details, was excavated at Pazyryk, a nomadic cemetery in southern Siberia from the fourth century B.C.[23] Recently, a similar harp was unearthed at Zaghunlug, Chärchän, Xinjiang Province.[24] The Xinjiang harp, the Pazyryk harp, and a third example from Olbia in the northern Black Sea area[25] belong to a type of Central Asian harp that had reached the western fringes of China in the first millennium B.C. A comparable Central Asian presence of lutes might well have influenced the shape of the ancient *qin*. This possibility is at odds with classical texts but is worth considering in view of current archaeological evidence.

The strings of ancient *qin*-zithers have not survived, but impressions of strings left on bronze tuning keys excavated from the tomb of the Nanyue Wang (died ca. 129 B.C.) in Guangzhou, Guangdong Province, show that the strings were probably of graduated thickness.[26] At Mawangdui, the surviving twenty-five silk strings of the *se* also reveal graduated diameters, between 0.6 and 1.9 millimeters.[27] Such graduated strings were a natural development of silk manufacture in which threads were made by combining thin strands. Silk strings are mentioned in texts dating from circa 600 B.C., where about two hundred characters appear for silk, including one for instrument strings.[28]

The survival of four wooden tuning pegs inside the sound box of Marquis Yi's *qin* presents the earliest evidence for the use of tuning pegs on a stringed instrument in China (see figs. 3.4b). These pegs were made from a circular tube, part of which was cut and shaped to form a flat surface (fig. 3.9.1a). The cut enabled a firm grip on the peg, as does any noncircular shape. The peg on the instrument from Mawangdui (see figs. 3.8.3, 3.9.1b) is an octagonal, truncated pyramid with a central channel and a hole on one side. The tomb of Nanyue Wang yielded eleven bronze pegs (possibly for several instruments) with a more sophisticated shape. These pegs narrow to a waist at the level of the hole on the side, presumably to accommodate a cord encircling the peg (see fig. 3.9.1c). It is similar to the peg from Linzi, Shandong Province (see fig. 3.9.1d).

Apparently the use and location of tuning pegs on the ancient *qin* required the deployment of an additional accessory, a tuning key. Many keys survived because they were made of bronze and have been catalogued and collected for a long time as ornamental fittings by Chinese archaeologists and Western museums ignorant of their true function. Their association with tuning pegs exca-

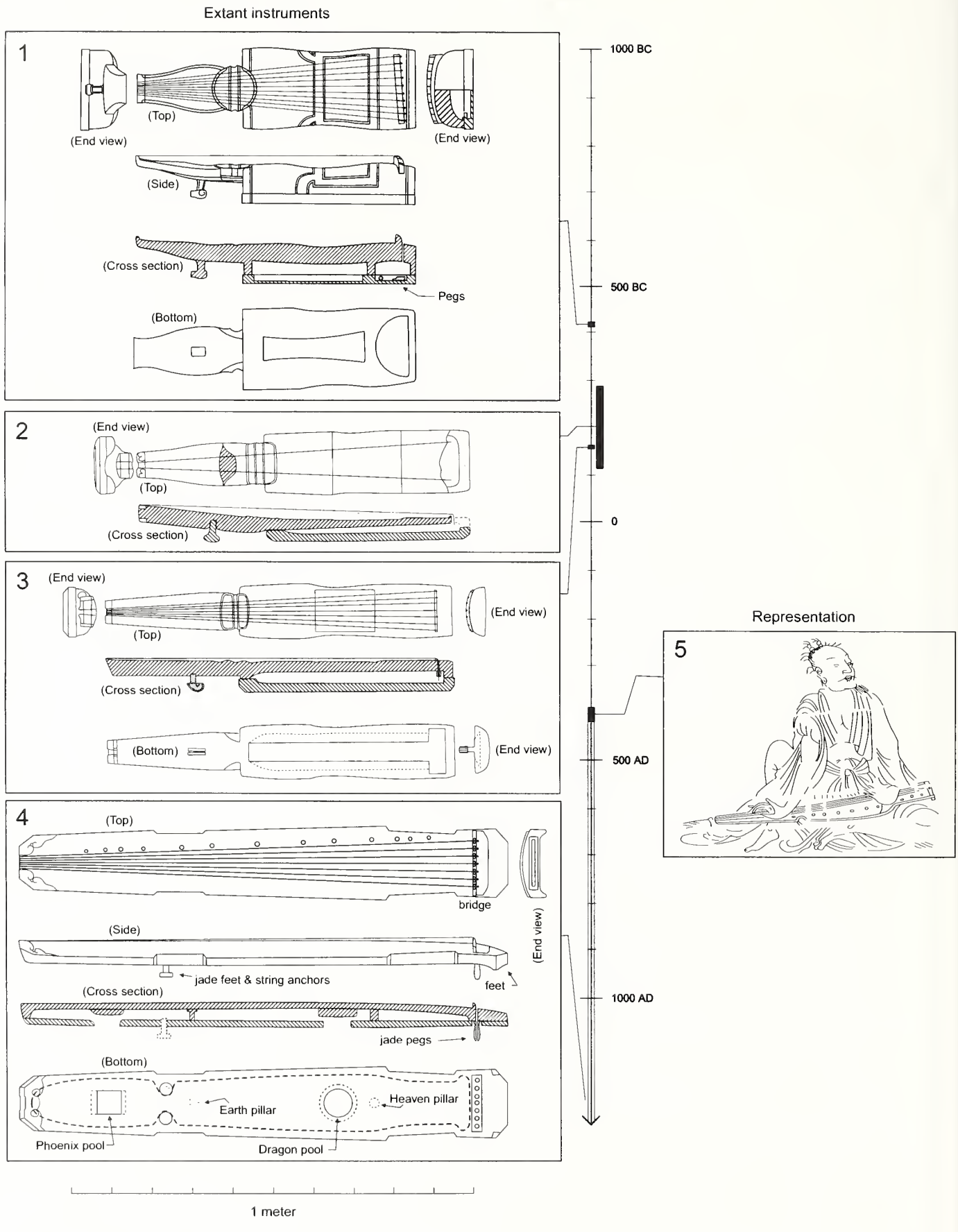

Extant instruments
1
(End view)
(Top)
(End view)
(Side)
(Cross section)
Pegs
(Bottom)
2
(End view)
(Top)
(Cross section)
3
(End view)
(Top)
(End view)
(Cross section)
(Bottom)
(End view)
4
(Top)
bridge
(Side)
(End view)
jade feet & string anchors
feet
(Cross section)
jade pegs
(Bottom)
Earth pillar
Heaven pillar
Phoenix pool
Dragon pool
1 meter
1000 BC
500 BC
0
500 AD
1000 AD
Representation
5

Fig. 3.8 Types of *qin*-zithers and their early depiction. All *qin* are drawn to scale at bottom and are linked to vertical time line at right.

.1 *Qin* from the tomb of Marquis Yi of Zeng (fig. 3.4a above). Fifth century B.C. Ten strings. Carved lacquered wood. Length 67 cm. After Li Chunyi 1996: 449, fig. 266.

.2 *Qin* from Wulipai Tomb 3, Changsha, Hunan Province. Third century B.C. Lacquered wood. Possibly nine strings. Length 79.5 cm. After Li Chunyi 1996: 451, fig. 267.

.3 *Qin* from Mawangdui Tomb 3, Changsha, Hunan Province. Second century B.C. Seven strings. Lacquered wood. Length 82.4 cm. After Li Chunyi 1996: 452, fig. 268.

.4 Classical *qin* said to have been made by Prince Lu in 1644. Ming dynasty (1368–1644). Seven strings. Lacquered wood, jade. Length 120 cm. Metropolitan Museum of Art, New York (1999.93).

.5 Ji Kang playing the *qin*. Detail from molded brick tomb tile at Xishanqiao, Nanjing, Jiangsu Province. A.D. 380–420. After Spiro 1990: 4, 47.

vated in 1983 from Nanyue Wang's tomb in Guangzhou finally allowed them to be properly identified. All keys consist of a shaft with a socket at one end and a handle at the other. The sockets have square cavities that fit the pegs. The handle is sculpturally modeled, often showing animals in combat or predator-victim relationships, such as a bird biting the rear of a feline (possibly a leopard) that bites a snake, a raptor clutching a small animal, or a feline biting a large bird (figs. 3.9.3a, d, f). Less aggressive figures include a seated goat, a bear, a goat-man, a coiled wolflike animal, and a crouching animal (see figs. 3.9.3b, c, e, g, h). Tuning keys made during the Warring States Period (480–221 B.C.) are usually square on the outside (see figs. 3.9.2a, 3.9.3a–e), but some from the Han dynasty are circular with square sockets (figs. 3.9.2g, 3.9.3f).

Many of the motifs on tuning keys are closely associated with the art of the Eurasian steppes in north and northwest China.[29] In particular, predator-victim motifs are common in the art of north China and Central Asia, and the goat, bear, and wolf are native to northeastern China. The human-headed goat (see fig. 3.9.3e), a common motif at Persepolis in ancient Iran, suggests more distant connections. Since the motifs are manifestly northern or even foreign, but the only surviving instruments that used such keys were all from the south, we suspect that tuning keys and pegs might have been introduced with northern *qin*-zithers that had been brought south, or may reflect the south's direct contact with peoples who lived in regions far to China's north and west.[30] To date, only a handful of tuning keys has been securely identified from three vastly disparate sites in south and north China, while the majority are of unknown provenance (see figs. 3.1, 3.9.3b, g, h).

The archaeological evidence presents a gross disparity between the numbers of *qin*-zithers (only four) and *se*-zithers (about seventy) in the southern state of Chu.[31] A similar preference for the *se* is revealed in a southern literary work from the fourth or third century B.C., the *Chu Ci* (Elegies of Chu). It mentions zithers six times, and each time it is the *se*.[32] On the other hand, northern texts give equal weight to both *se* and *qin:* the *Shi Jing* (Classic of poetry) mentions the *se* eleven times and the *qin* nine times, pairing the instruments eight times.[33] This seems to indicate that the *qin* flourished mainly in the north while the *se* was appreciated both north and south. This, with the *qin*'s lutelike shape and its steppe-inspired tuning keys, supports a northern origin for the instrument. The recent identification of one or two tuning pegs recovered in the 1950s from the Warring States site in Fenshuiling, Changzhi, Shanxi Province, gives credence to this supposition (see fig. 3.9.3b).[34] This is an important discovery because these tuning keys are close contemporaries of Marquis Yi's ten-stringed *qin* and thus provides the first excavated evidence for the existence of similar instruments in north China at that time. More definite conclusions must await additional archaeological data. During the Han dynasty, territorial segregation of the *se* and *qin* had probably disappeared. Sets of string

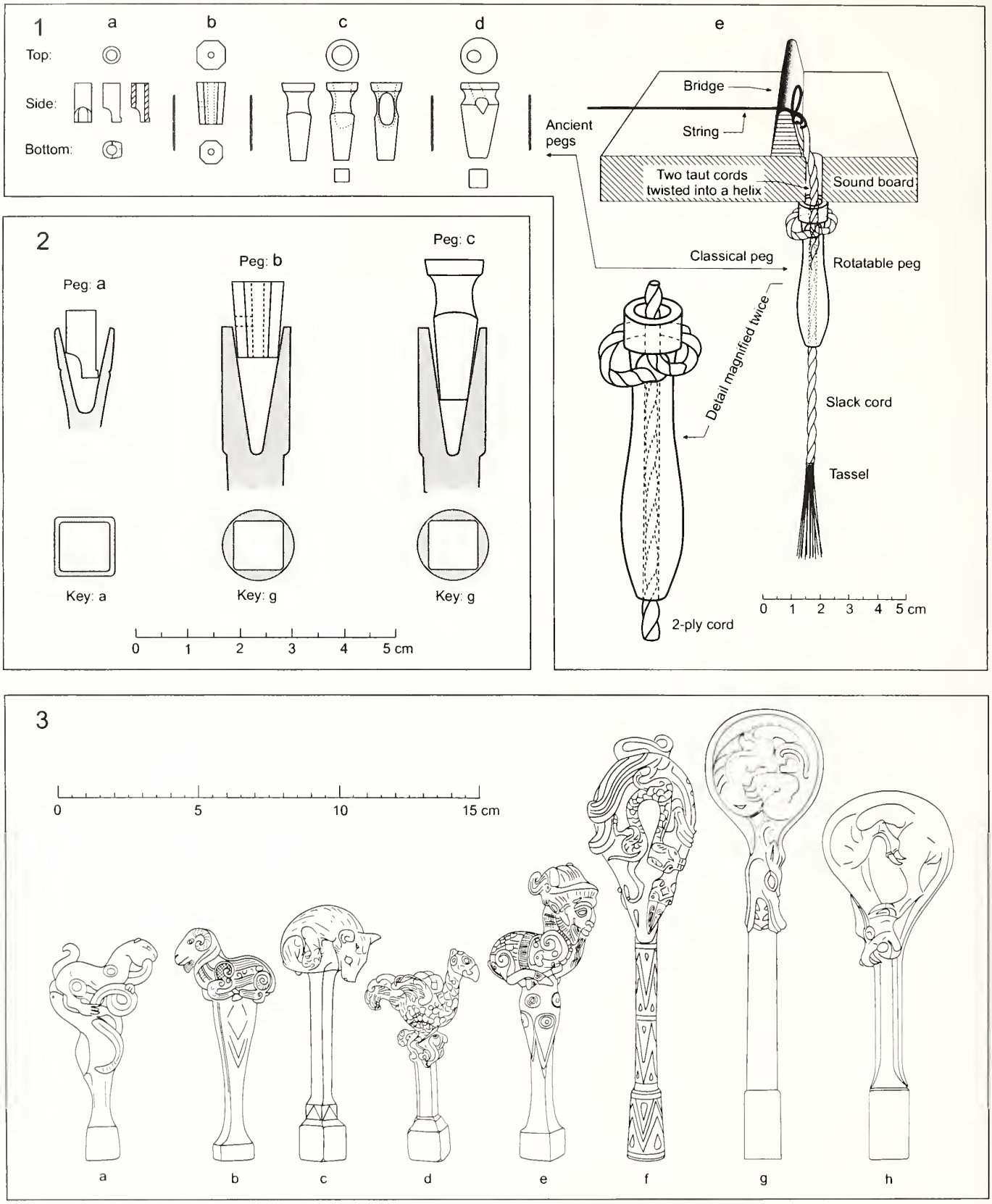

1
a
b
c
d
e
Top:
Side:
Bottom:
Bridge
String
Ancient pegs
Two taut cords twisted into a helix
Sound board
Classical peg
Rotatable peg
Detail magnified twice
Slack cord
Tassel
2-ply cord
0 1 2 3 4 5 cm
2
Peg: a
Peg: b
Peg: c
Key: a
Key: g
Key: g
0 1 2 3 4 5 cm
3
0 5 10 15 cm
a
b
c
d
e
f
g
h

Fig. 3.9 *Qin* tuning pegs and keys.

.1 Types of *qin* tuning pegs (ancient to modern) drawn to the same scale. (a) Wooden peg with circular cross section for *qin* of figure 3.4a above. (b) Bone peg with octagonal cross section for *qin* of figure 3.8.3 above. (c), (d) Bronze pegs with square heads and circular bases, for *qin*-zithers buried with tuning keys in figs. 3.9.3g, h. (e) Classical *qin* peg with circular cross section. Drawings by Bo Lawergren.

.2 Cross sections of sockets on two tuning keys (figs. 3.9.3a, f) and three pegs (figs. 3.9.1a–c) drawn to the same scale, showing how the keys might have fitted the pegs.

.3 Bronze tuning keys. (a) Bird, feline, and snake; provenance unknown; fifth century B.C.; height 8.2 cm; Freer Gallery of Art, Smithsonian Institution, F1916.454. (b) Seated goat; excavated from Fenshuiling, Changzhi, Shanxi Province; fifth century B.C.; height 8.4 cm; after photograph courtesy Zhang Deguang, Shanxi Institute of Archaeology. (c) Crouching bear; reported provenance, Jincun, Luoyang, Henan Province; fourth century B.C.; height 9.2 cm; Freer Gallery of Art, Smithsonian Institution, F1951.7. (d) Raptor with bear cub; provenance unknown; fourth century B.C.; height 7.7 cm; Therese and Erwin Harris collection. (e) Goat-man; provenance unknown; third century B.C.; height 10.9 cm; Therese and Erwin Harris collection. (f) Feline and large bird; provenance unknown; third to second century B.C.; height 15.5 cm; collection of Shelby White and Leon Levy. (g) Coiled wolflike animal; excavated from tomb of Nanyue Wang, Guangzhou, Guangdong Province; ca. 122 B.C.; height 16 cm; after Guangzhoushi 1991: 93, fig. 62:1. (h) Crouching animal; excavated from Linzi, Shandong Province; second century B.C.; height 13.3 cm; after Ziboshi 1997: 41, fig. 31:2.

anchors for *se*-zithers recovered from sites in the far north and south indicate that the instrument was widespread.[35]

Ancient *qin*-zithers have been excavated only from Chu territory, but instruments in the north were probably similar, although the music played on them could have been different (see Chapter 1). After the Han dynasty, the Chu order was forgotten. The *se* nearly disappeared while the *qin* flourished, its design greatly modified to produce the classical instrument we know today. The earliest visual representation of a classical *qin* appears on a tomb tile from circa A.D. 400 (see fig. 3.8.5), which depicts Ji Kang (A.D. 223–62), one of the legendary reclusive *qin* players in the instrument's history.[36] Since then the main features of the classical *qin* have remained essentially unchanged to this day.

THE *ZHU*

The third type of zither found in Marquis Yi's tomb is long, slim, and elaborately decorated (see figs. 3.5, 3.10). The wide part of the body is hollow and the narrow neck solid. The strings are guided around the zither in much the same way as on the *se,* but neither movable bridges nor tuning pegs have been found.[37] Almost the entire surface is covered with bird and geometric designs, similar to those on the *se,* painted in red and black lacquer (fig. 3.2 details). Designs under the neck show human-headed figures among intertwined snakes, like the ones on Marquis Yi's coffin (compare figs. 3.5 detail a, 1.4 detail, and discussion of Checklist no. 1). Three more instruments, all five stringed, have recently been excavated from a richly furnished tomb at Wangchengpo, Changsha, Hunan Province (see fig. 3.10.2).[38] A small nonfunctional example intended for burial has also been recovered (see fig. 3.10.3).

The identity and function of the marquis's five-stringed instrument, the first excavated of its kind, have been the cause of much discussion but little agreement among Chinese scholars. In an early investigation, Huang Xiangpeng identified it with the tuning instrument discussed above called a *jun;*[39] but in an examination of the newly excavated (and identical) instruments from Changsha he has called them *zhu.*[40] In the discussion of the *zhu* in his compendium on ancient Chinese musical instruments, Li Chunyi did not include the marquis's instrument, preferring to leave it unidentified.[41] The Han dictionary *Shuowen jiezi* from circa A.D. 100 describes a five-stringed *zhu* with bamboo body,[42] the latter probably an extrapolation from the use of the bamboo radical in the character for *zhu.* The *Jiu Tang Shu* (Old history of the Tang dynasty) from A.D. 740–785 describes the *zhu* as being struck with a bamboo stick. But these late observations are unreliable, since the *zhu* had probably already disappeared by the end of the Han dynasty (A.D. 220). Texts from the Ming dynasty (1368–1644) call the *zhu* a bowed instrument, but bowing was not practiced

Fig. 3.10 Types of *zhu*-zithers and their early depiction (ca. 500 B.C.–A.D. 1). All *zhu* drawn to scale at bottom and linked to vertical time line at right.

.1 *Zhu* from the tomb of Marquis Yi of Zeng (fig. 3.5 above). Fifth century B.C. Five strings. Carved lacquered wood. Length 115 cm. After Li Chunyi 1996: 459, fig. 272.

.2 *Zhu* from Wangchengpo, Changsha, Hunan Province. Second century B.C. Five strings. Lacquered wood. Length 117.5 cm. After *Kaogu* 1994, 8: 722, fig. 3.

.3 *Zhu* (funerary). Mawangdui Tomb 3, Changsha, Hunan Province. Second century B.C. Five strings. Lacquered wood. Length 31 cm. After Li Chunyi 1996: 456, fig. 270:2.

.4 Detail from lacquered coffin showing fabulous creature playing a *zhu*. Mawangdui Tomb 1, Changsha, Hunan Province. Ca. 168 B.C. After Hunan 1973: pl. 21; Li Chunyi 1996: 457, fig. 271: 1.

.5 Detail from lacquered wood cosmetics case showing man playing a *zhu*. Lianyungang, Haizhou, Jiangsu Province. Second to first century B.C. After *Kaogu* 1975, 3: 173, fig. 4:1.

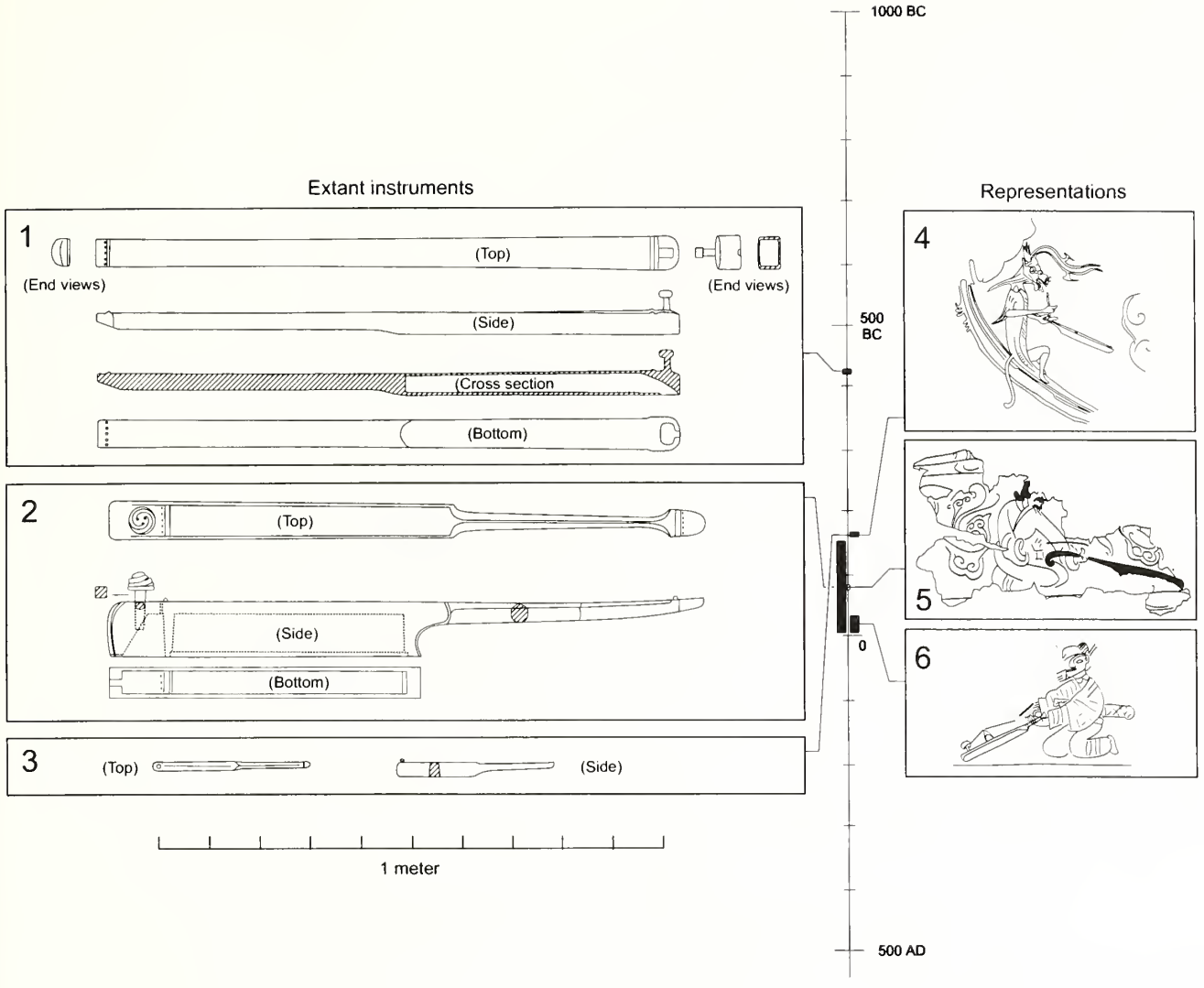
.6 Detail from brick relief from Xinye, Henan Province. Late first century B.C. After Huang Xiangpeng 1996, Henan: 195.

before circa A.D. 750, when it was used on the *zhazheng* or *yazheng* (a type of zither). This bow employed a rigid stick rather than a bundle of hair.[43]

Like the *zhu* of the Han texts, Marquis Yi's zither also has five strings. The placement of the holes indicates that the strings were so closely spaced that plucking them would have been difficult and they may indeed have been struck with a stick. A passage in the *Zhanguoce* (Discourse of the Warring States) from 480 to 280 B.C. reads: "Linzi is so wealthy and well supplied that all of its inhabitants play the *yu*-mouth organ, strum [*gu*] the *se*-zither, strike [*ji*] the *zhu*-zither, or pluck [*tan*] the *qin*-zither."[44] This passage, written at the zenith of the *zhu*'s popularity, describes three different playing methods for zithers that seem to correspond with the three examples in the tomb of Marquis Yi. Representations from the second and first century B.C. suggest the *zhu* might actually have been struck with a stick (figs. 3.10.4–6). Moreover sticklike objects were found near the *zhu* from Changsha (see fig. 3.10.2).[45] When playing the instrument, the musician would hold the neck of the instrument in the left hand, point it away from his or her body, and strike it with a stick held in the right hand. As illustrated, the fingers of the left hand could have pressed down on the strings to shorten them. But string lengths would have changed relatively little, producing perhaps only one or two steps above the open string pitch. Two illustrations (see figs. 3.10.4, 3.10.6) suggest that the instrument probably had movable bridges (at least by Han times), but none can be conclusively associated with a surviving *zhu*.

THE *ZHENG*

Three fragmentary examples of a different type of zither have recently been excavated from sites in southeast China (fig. 3.11.1–4),[46] but the type was not included in Marquis Yi's ensembles. This suggests that it was a strictly provincial instrument during the marquis's time and had not spread much beyond its southeastern home. This instrument has a long and slightly trapezoidal body sharply curved at both ends. The body is scooped out to provide a shallow cavity. A rebated groove along the rim of the cavity was probably meant to receive a thin board to close it, but no such board has survived. The strings are fewer than on the *se*—twelve to thirteen—and are not divided into three separate bundles. The poor preservation of these instruments means that many details (such as the nature of bridges and string suspensions) are unclear, but it is likely that they were tuned by movable bridges, though none has been found. In their current surviving form, even fixed bridges are absent. One is certainly needed at the wide end near the two rows of holes. On instruments recovered from Guixi Xian in Jiangxi Province (see figs. 3.11.1, 2) the rows contain seven and six large round holes, two centimeters in diameter, that correspond to a



single row of thirteen small holes at the narrow end. An instrument from Wu Xian, Jiangsu Province (see fig. 3.11.3), has two rows of six large, square holes that match twelve small holes at the other end. Narrow side walls rise above the soundboard near the double rows of holes, revealing tiny holes that may have served as string attachments. These instruments appear plain and undecorated, except for the *zheng* from Wu Xian, which has traces of lacquer at the side walls.

A pair of similar instruments is shown inside the small bronze model of a house excavated from a fifth-century B.C. tomb in Shaoxing, Zhejiang Province (fig. 3.11.5; see also fig. 1.11). These miniature figures share details with the excavated zithers, having long bodies, curved ends, and raised side walls. The zithers rest on the players' knees with the bent end almost touching the floor. The same features are still present on the *zheng* a millennium later (fig. 3.11.6)—identical shape and number of strings (about fourteen on the modern compared to twelve or thirteen on the ancient instrument). Apparently, they are one and the same instrument caught at different moments in China's history.

The origin of the *zheng* as recorded in classical texts disagrees with the

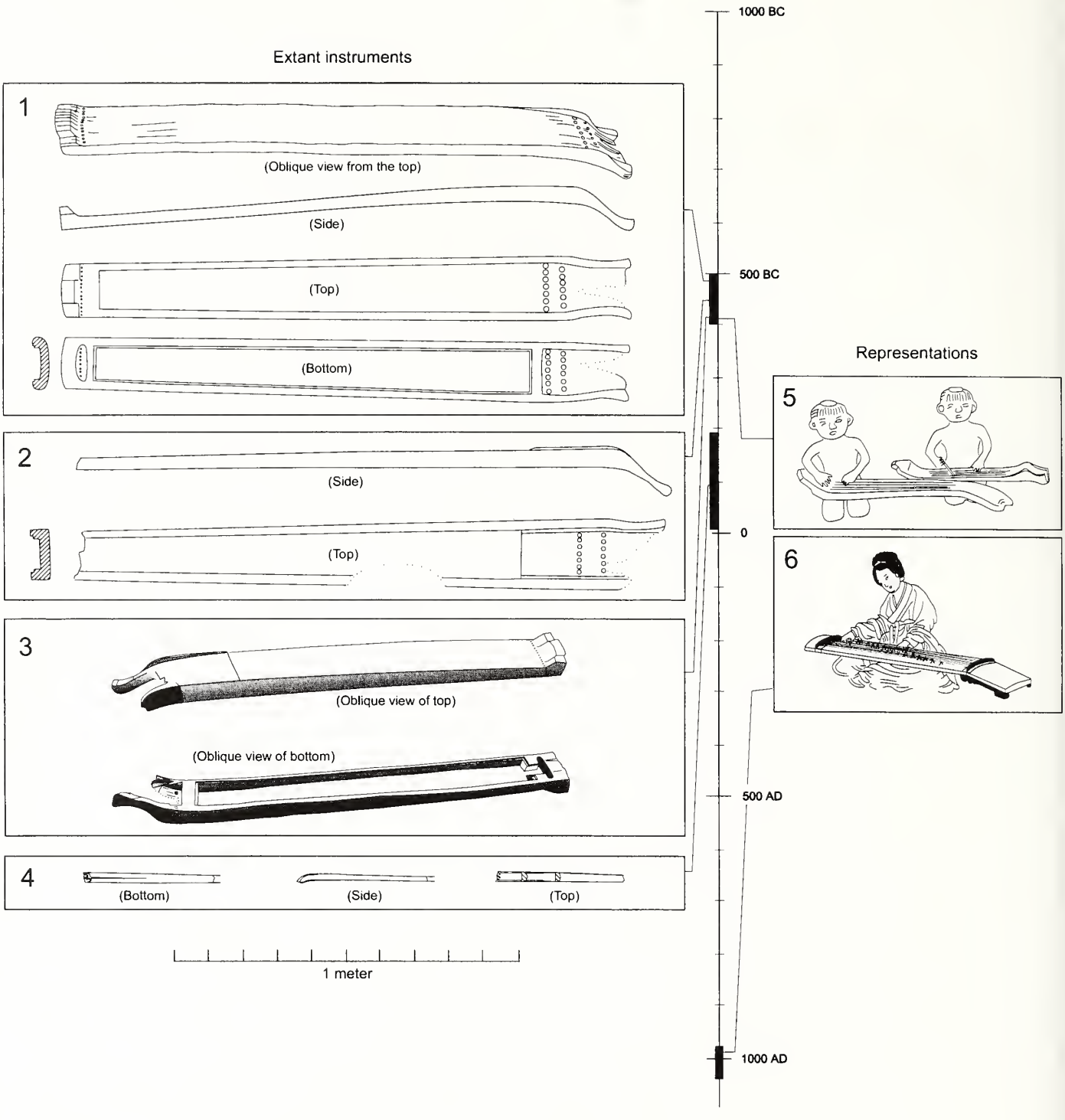

Extant instruments
1
(Oblique view from the top)
(Side)
(Top)
(Bottom)
2
(Side)
(Top)
3
(Oblique view of top)
(Oblique view of bottom)
4
(Bottom)
(Side)
(Top)
1 meter
1000 BC
500 BC
0
500 AD
1000 AD
Representations
5
6

Fig. 3.11 Types of *zheng*-zithers and their early depiction. All *zheng* drawn to scale at bottom and linked to vertical time line at right.

.1 *Zheng* from cliff burials Tomb 2 at Guixi Xian, Jiangxi Province. Fifth century B.C. Thirteen strings. Wood. Length 166 cm. After *Wenwu* 1980, 11: 13–14, figs. 22:1, 23:1; and Liu Lesheng 1992: 200–201.

.2 *Zheng* from Guixi Xian Tomb 3, Jiangxi Province. Fifth century B.C. Thirteen strings. Wood. Length 174 cm (damaged). After *Wenwu* 1980, 11: 13–14, figs. 22:2, 23:2.

.3 *Zheng* from Changqiao, Wu Xian, Jiangsu Province. Fifth century B.C. Twelve strings. Wood with traces of lacquer. Length 132.8 cm. Huang Xiangpeng 1996, Jiangsu/Shanghai: 248–51.

.4 *Zheng* (funerary) from Luobowan Tomb 1, Gui Xian, Guangxi Province. Second to first century B.C. Wood. Length 42.4 cm (damaged). Li Chunyi 1996: 456, fig. 270:1.

.5 Drawing of musicians inside bronze model of a house from Tomb 306, Shaoxing, Zhejiang Province. Fifth century B.C. (See also fig. 1.11.)

.6 Classical *zheng* with thirteen to fourteen strings, from painting attributed to Zhou Wenju (ca. A.D. 970). Ink and color on silk. After the Art Institute of Chicago E11171 and 50.1370; Kishibe 1956: 105.

archaeological evidence. Texts claim that the *zheng* was invented during the Qin dynasty (221–206 B.C.). But the excavated prototypes come from sites in southeast China dating from the fifth century B.C. in the ancient territory of Yue. It is possible that the *zheng* was unknown in the north before the Qin conquest of Yue in 222 B.C. The rise of popular music during the Qin dynasty prompted musicians to look for a louder and more portable zither (unlike the *se*), and the provincial *zheng* fitted the bill.[47]

Notes

ACKNOWLEDGMENT: The author wishes to thank Jenny F. So for editorial suggestions and supplemental references.

1. Hornbostel and Sachs 1961: 22. Some older Western literature inaccurately calls the *qin* a lute (for example Gulik 1969a, Gulik 1969b).

2. Open string pitches are discussed in Mok 1978: 48–49.

3. Sachs 1977: 187.

4. Lawergren 1997a compares the two in detail.

5. Hunan 1973: 104; Mok 1978: 63. See also note 31 below.

6. On the twelve *se* from Suizhou, the soundboard ranged between 15 and 25 millimeters in thickness (Hubei 1989: 160, table 20).

7. See Li Chunyi 1996: 426; Hubei 1989: 161, fig. 73.

8. For a discussion of the possible meaning of these motifs, see Checklist no. 1; of lacquer painting techniques, see So 1997.

9. See Li Chunyi 1996: 441–42, table 110.

10. Ibid.: fig. 254.

11. Ibid.: 427, table 106.

12. Early anchors were wood and later ones bronze. The latter often survive without their wooden instruments (see So and Bunker 1995: no. 72).

13. Li Chunyi 1996: 426, table 105.

14. String properties are described in Hunan 1973: 102–6; Mok 1978: 46–51; Lawergren 1997a: fig. 5.

15. This capacity was exploited on Ming *se*, which were played by simultaneously plucking strings an octave apart (Chen 1975: 157).

16. Chime U1 seems to be a combination of disparate chimes (Falkenhausen 1993b: 249). For another interpretation of the musical character of the upper-tier bells, see Chapter 2.

17. Heterophony is common in non-European ensemble music. It permeates the world's first notated ensemble scores, including those from Tang dynasty China (composed before A.D. 841). See Picken 1981: 17–18.

18. Kaufmann 1976: 59, n. 92. The term "harmony" in Kaufmann would be better translated "attuned."

19. Needham et al. 1962: 185.

20. The instrument from Wulipai, Changsha, Hunan Province, was excavated in 1980 (*Hunan kaogu jikan* 1982, 1: 34, fig. 5); another from Tomb 1 at Guodian, Jingmen, Hubei Province, was excavated in 1993 (Yung 1998: 13, fig. 4; excavation reported in *Wenwu* 1997, 7: 35–48).

21. Thickness measured at the round sound hole of the *qin* in figure 3.8.4.

22. Karomatov et al. 1987: nos. 96 and 98.

23. Lawergren 1990, Lawergren 1997b.

24. Huang Xiangpeng 1996, Xinjiang: 13.

25. Bachmann 1994: figs. 1–3, 7, 9, 16, 17.

26. Guangzhoushi 1991: pl. 47:3; discussed in Lawergren 1997a. The instrument from Guangzhou has disintegrated (possibly more than one). It was most likely a *qin,* since the pegs fit the sequence illustrated in figure 3.9.1 and they fit the key (see fig. 3.9.3g) from the same site.

27. See note 14 above.

28. Lindqvist 1991: 216.

29. So and Bunker 1995: nos. 70 and 71. A tuning key in the Copenhagen National Museum (B4407) is identical in design to the Freer example illustrated as figure 3.9.3a, but it is 59 percent larger.

30. See article by Major in Cook and Major 1999: 121–44.

31. Merely counting *se* in Hubei (total of fifty-one) and Henan (total of twelve) Provinces as published in Huang Xiangpeng 1996, Hubei and Henan volumes.

32. Hung et al. 1974: 126–27.

33. Hawkes 1985: 102, 113, 198, 228, 235. Gopal Sukhu kindly checked the zithers in the *Chu Ci* and obtained word counts from Jiang Liangfu 1985.

34. The author is grateful to Jenny F. So for bringing this possible identification to his attention, and to Li Xiating and Zhang Deguang of

the Shanxi Institute of Archaeology for pursuing it and supplying the photograph and dimensions on which the current drawing is based. The ram-shaped tuning peg was recorded merely as an "ornamental fitting" with no illustration or dimensions in the original archaeological report (see *Kaogu xuebao* 1957, 1: 105). A second similar object from the same site, now kept in the National Museum of History in Beijing, and identified as an ornamental fitting, may also prove to be a tuning key (ibid.: 115, pl. 5:7).

35. Hebei 1980: pls. 50:2, 50:3, 50:5, 50:6, 85:3; Guangzhoushi 1991: pls. 15:2, 15:3, 48:1.

36. See Chapter 1. For the best discussions of the *qin* and its lore, see Gulik 1969a, Gulik 1969b.

37. Bridges were supposedly recovered with the instruments in figure 3.10.2 from Wangchengpo, Changsha, Hunan Province, although they could also belong to *se*-zithers found in the same tomb (*Zhongguo wenwubao* 28 July 1996: 3). Close examination of the original painting of figure 3.10.4 in the Hunan Provincial Museum revealed a single bridge. For another Western Han pictorial illustration of a *zhu* with a bridge, see figure 3.10.6.

38. *Zhongguo wenwubao,* 28 July 1996: 3.

39. Huang Xiangpeng 1992; also see Needham et al. 1962: 185 for characterization of the *jun.* I owe this summary of current Chinese scholarly debate over the identification of this instrument to Jenny F. So.

40. Huang Xiangpeng 1994.

41. Li Chunyi 1996: 455–60.

42. See also Picken 1962: 41, where *îjuk* is equivalent to *zhu.*

43. Picken 1965: 83.

44. Quoted in Crump 1996: 169, with zither terms expanded by John S. Major.

45. *Kaogu* 1994, 8: 724; *Zhongguo wenwubao,* 28 July 1996: 3. Close examination of one of these *zhu* by the author during a visit to Changsha in July 1999 revealed thin and shallow impressions on the top edge of the instrument's body. If these marks were left by the striking stick, their directions were consistent with the playing positions given in figures 3.10.4–6, where the player's right elbow is shown near the top of the *zhu.* The author is grateful for the generous cooperation of the staff of the Hunan Provincial Museum and the Changsha Municipal Museum that allowed him to study this instrument.

46. *Wenwu* 1980, 11: 1–25; Huang Xiangpeng 1996, Jiangsu: 248–51, pl. 1:13.

47. Gulik 1951: 13–15.

FOUR | Winds

FENG GUANGSHENG

THREE TYPES of wind instruments were discovered in the central and eastern chambers of Marquis Yi's tomb (figs. 4.1–4.3): transverse flute (*chi*), panpipes (*xiao/paixiao*), and mouth organ (*sheng*). The central chamber representing the marquis's ceremonial hall yielded two transverse flutes, two panpipes, and four mouth organs, which formed part of his court ensemble. The eastern chamber, representing his residential quarters, contained two mouth organs played with the *se*- and *qin*-zithers (see Chapter 3) and a small drum (see Checklist no. 16), which together make up the marquis's chamber ensemble (see Chapter 1).

Musically these wind instruments played important roles in the two ensembles because of their special acoustic qualities and their ability to complement other instruments. The percussion (bells and stone chimes) and plucked-string instruments (zithers) share the same acoustic characteristics—once the sound is produced, it immediately begins to decay, moving audibly from a strong and loud beginning to a weak and soft ending. The decaying process of the plucked-string instruments is especially swift. By contrast, because the wind-instrument player's breath controls the volume and length of the sounds emitted, it is possible to produce sustained notes that go from strong to weak (or vice versa), and long or short notes. This characteristic of wind instruments enables them to supply the audio links between notes and provide overall coherence to musical performances that included percussion and plucked-string instruments. "Start with metal and stone [percussion]; move [the music] along with silk [string] and bamboo [wind]" notes the *Zhou Yu* (Narratives of Zhou), second chapter of the *Guo Yu* (Narratives of the states) dating from the fourth to the third century B.C., indicating an early awareness of the qualities distinguishing wind and percussion instruments.

Fig. 4.1a, b Two transverse flutes (*chi*). From the central chamber of the tomb of Marquis Yi of Zeng, Leigudun, Suizhou, Hubei Province. Fifth century B.C. Lacquered bamboo. Lengths 29.3 cm (above), 30.2 cm (below). Hubei Provincial Museum. Photograph by Hao Qinjian. (See also Checklist nos. 12, 13.)

Fig. 4.2 Thirteen-pipe panpipes (*xiao/paixiao*). From the central chamber of the tomb of Marquis Yi of Zeng, Leigudun, Suizhou, Hubei Province. Fifth century B.C. Lacquered bamboo. Lengths of pipes 22.80–5.20 cm, diameters of pipes 0.85–0.55 cm, maximum width 11.70 cm. Hubei Provincial Museum. Photograph by John Tsantes. (See also Checklist no. 11.)

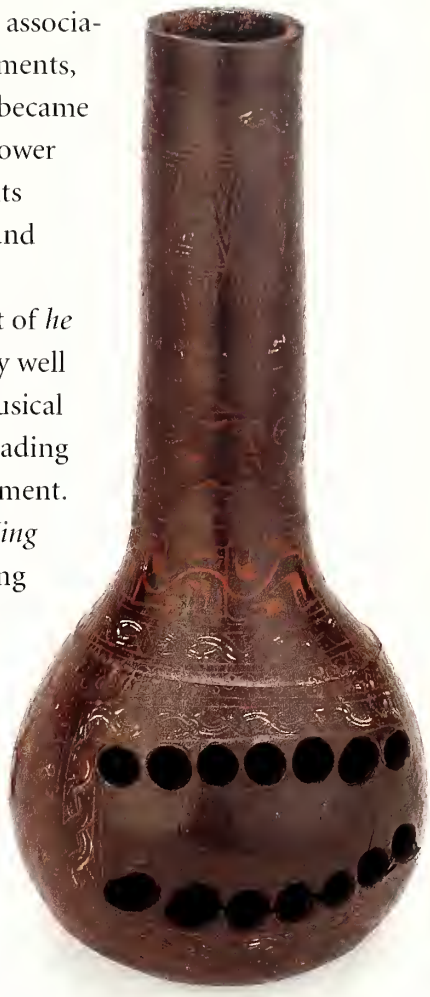
ORIGIN AND EXTRAMUSICAL SIGNIFICANCE

Among musical instruments, the invention of wind instruments might have occurred simply and naturally. Ancient people were probably inspired by the natural sounds produced by friction caused by air moving across surfaces. Hollow materials such as bamboo, reed, and certain animal bones that produce sounds were readily available. Apart from human breath, no other accessory was needed. It is not surprising, then, that some of the earliest instruments known were wind instruments. The bone flute excavated from the Neolithic sites at Jiahu, Wuyang, Henan Province (fig. 4.4), and the bone whistles from Hemudu, Yuyao, Zhejiang Province (fig. 4.5), were produced eight thousand and seven thousand years ago respectively.[1] Moreover, myths relating to the origins of music are also connected with wind instruments. One legend describes the Yellow Emperor (Huangdi, one of China's five mythical kings) ordering his master musician, Ling Lun, to make pitch pipes out of bamboo. In Greek mythology, panpipes were invented when Pan, the shepherd god, tried with his music to win the hand of Syrinx, goddess of the forest and rivers.

As mentioned in Chapters 1 and 2, Bronze Age China (ca. 2000–500 B.C.) held ritual and music in high esteem, and musical instruments occupied a special place in politics and society. As symbols of rank and power, musical instruments were greatly valued by the ruling elite. As important ceremonial regalia for ritual worship of heaven and earth, gods and ghosts, at state banquets, and to entertain prestigious guests, rulers, and ministers, they were widely used and regarded as almost sacred or magical instruments. The combination of a crocodile-skinned wooden drum and a large chime stone recovered from a late Neolithic tomb at Taosi, Xiangfen County, Shanxi Province (ca. third millennium B.C.) shows that musical instruments were already status indicators at this

Page 86: detail of pictorial brick showing panpipes player from Dangyang, Hubei Province. Eastern Han (A.D. 25–220). After Huang Xiangpeng 1996, Hubei: 168.

early period.[2] During subsequent millennia, these associations became more formalized. Percussion instruments, such as the bell and stone chimes, and the drum, became embodiments of princely prestige and religious power (see Chapter 2); while wind and string instruments were considered appropriate for both nobleman and commoner.



By the late first millennium B.C., the concept of *he* (attunement in musical performance) was already well developed (see Chapter 1). It was believed that musical attunement could give rise to spiritual oneness, leading ultimately to harmony among people and government. In the *Xiao Ya, He Ren Si* (Minor odes of the *Shi Jing* [Classic of poetry]), a compilation of poems dating from ca. 1000 to 600 B.C.), verses such as "The elder brothers play the *xun* [ocarina] and the younger brothers play the *chi* [flute]" suggest that these instruments performing together symbolized harmonious brotherly relationships. The Chinese character *he* was also the ancient name for an instrument composed of bundled pipes, identified as a primitive form of panpipes or mouth organ (discussed below). For ancient musicians, the pursuit and expectations of attunement among wind and other

Fig. 4.3 Eighteen-pipe mouth organ (*sheng*) with seven surviving pipes and two reeds. From the tomb of Marquis Yi of Zeng, Leigudun, Suizhou, Hubei Province. Fifth century B.C. Lacquered gourd and bamboo. Height of gourd body 22.0 cm, diameter of opening for pipes 0.8–1.1 cm. Hubei Provincial Museum. Photograph by John Tsantes. (See also Checklist no. 10.)

Fig. 4.4 Bone flute, one of sixteen from Jiahu, Wuyang, Henan Province. Late Neolithic period, ca. 6000 B.C. Length 22.2 cm. Photograph courtesy of Feng Guangsheng.

instruments was even greater than today's musicians. In the marquis's court ensemble, both the bell and stone chimes were fixed-pitch instruments, and last-minute retunings could be very difficult (see Chapter 2). The challenge to wind-instrument makers and musicians would be to design and play instruments that enabled them to perform as one with the bell and stone chimes.

Another important role played by wind instruments was "sound prognostication," a kind of divination. Perhaps inspired by a deep understanding of the scientific principles behind wind instruments, the concepts of "wind" and "air" were employed in ancient China to predict social, military, and meteorological events. In the *Lü Shu* (Treatise on pitches) from the *Shi Ji* (Records of the grand historian) written by Sima Qian (ca. 145–90 B.C.), a passage records that pitch pipes were played to predict the outcome before King Wu of Zhou declared war against Zhou, the last king of Shang. The Eastern Han scholar Zheng Xuan (A.D. 127–200) annotates the above:

> Military treatises state that on the day an offensive is launched, the ruler gives a set of bow and arrows to the commander, while soldiers hoist the flag. The commander draws the bow and shouts at the top of his voice, and the musicians sound the pitch pipes. *Shang* [*re*, the second note in a pentatonic scale] means victory and the army is strong; *jue* [*mi*, the third note] means rebelliousness and loss of morale in the army; *gong* [*do*, the first note] means harmony and close bonds among the soldiers; *zheng* [*sol*, the fourth note] means impatient and angry commanders with exhausted soldiers; *yu* [*la*, the fifth note] means a weak army with few brave and intelligent soldiers.

Fig. 4.5 Bone whistles from Hemudu, Yuyao, Zhejiang Province. Late Neolithic period, ca. 5000 B.C. Lengths 5.7–10.5 cm. Photograph courtesy of Feng Guangsheng.

The different tones produced by pitch pipes were thought to be capable of predicting the destiny of the state, reflecting the morality of the people and the morale of the army. "Sound prognostication" gave a magical meaning to ancient China's wind instruments. Marquis Yi's wind instruments, dating to the fifth century B.C., appeared at the height of China's Bronze Age musical history, against a complex backdrop of several millennia of development.

THE TRANSVERSE FLUTE (*CHI*)

The flute is one of the simplest, oldest, and most popular instruments in China. It was particularly common in central and southern China throughout the first millennium B.C. A passage in the *Xiang Shui* (Xiang River) chapter of the *Shui Jing Zhu* (Classic of rivers; sixth century A.D.) — "The northeast of Mount Jun faces Mount Bian, where the *chi* bamboo grows in abundance" — suggests that ancient residents of south China were experienced harvesters of materials for making flutes. The statement also implies that flute production was a skilled craft. The *Biography of Fan Ju* chapter in the *Shi Ji* records that "Wu Zixu arrived at Lingshui with no means for food. He drummed on his belly, played the flute [*chi*], and went begging in the marketplace." Fan Ju's story shows that flutes were popular among the ordinary populace. The origins of the Chinese flute remained a mystery until the discovery of sixteen bone flutes dating from circa 6000 B.C. from the Neolithic site at Jiahu, Wuyang, Henan Province (see fig. 4.4). The two flutes from Marquis Yi's tomb at Leigudun, Suizhou, also helped to clarify further questions.

Part of his court ensemble, the marquis's flutes are stopped, single-pipe instruments held horizontally (see figs. 4.1a, b, 4.6). To date, these are the only two surviving stopped flutes from the first millennium B.C. The two flutes are

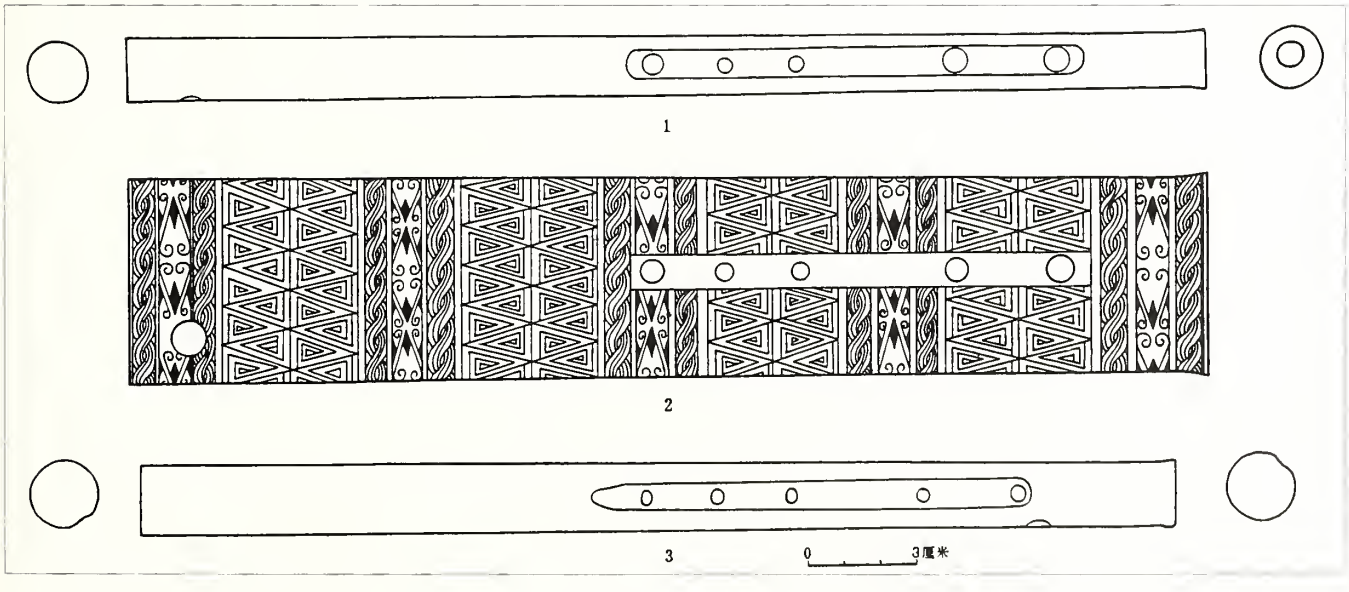


Fig. 4.6 Drawing of transverse flutes (*chi*) shown in figs. 4.1a, b. After Huang Xiangpeng 1996, Hubei: 289.

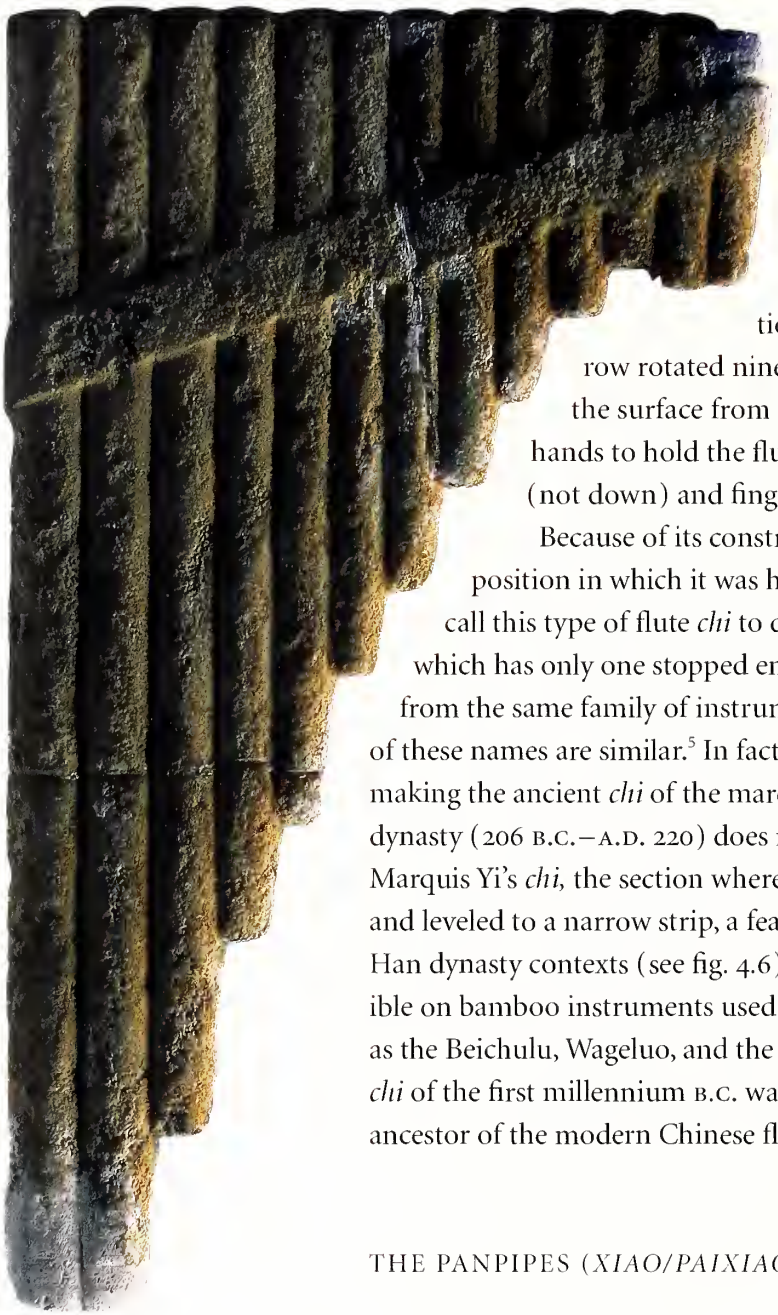


Fig. 4.7 Stone panpipes from Xiasi Tomb 1, Xichuan, Henan Province. Sixth century B.C. Lengths 3–15 cm. Photograph courtesy of Feng Guangsheng.

similar. Each is made of a single section of bamboo (*Pleioblastus maculatus*). One end is closed with a stopper and the other end is closed by the tissue that grows naturally at the node.[3] Each has seven holes: one hole for blowing into and one for the air to escape, placed in line at opposite ends. Five additional holes for fingering are evenly spaced in a row rotated ninety degrees around the surface from the other two. A musician would use both hands to hold the flute horizontally, with palms facing the body (not down) and fingers on the finger holes.

Because of its construction (with both ends stopped) and the position in which it was held, some Chinese scholars have preferred to call this type of flute *chi* to distinguish it from the later Chinese flute *di*, which has only one stopped end.[4] Other scholars consider the *chi* and *di* to be from the same family of instruments because the old Chinese pronunciations of these names are similar.[5] In fact, comparison of the methods employed in making the ancient *chi* of the marquis's time and the *di* of the subsequent Han dynasty (206 B.C.–A.D. 220) does reveal a relationship between them. On Marquis Yi's *chi*, the section where the fingering holes are placed was skinned and leveled to a narrow strip, a feature also found in *di* flutes recovered from Han dynasty contexts (see fig. 4.6).[6] Even today, traces of this feature are still visible on bamboo instruments used by minority peoples in southern China, such as the Beichulu, Wageluo, and the Dongdongkui tribes.[7] This indicates that the *chi* of the first millennium B.C. was actually the *di* of the Han dynasty and the ancestor of the modern Chinese flute.

THE PANPIPES (*XIAO/PAIXIAO*)

Of all the musical instruments recovered from Marquis Yi's tomb, the one that has the greatest global significance is the panpipes (*xiao;* modern, *paixiao*), for it is an instrument that transcends all historical, geographical, and national boundaries.

Like the flute, the panpipes probably also had very early beginnings. In oracle-bone script of the Shang dynasty from around 1300 to 1050 B.C., the character for *he* (attunement) resembles a bunch of bamboo pipes tied together with a string. This has been interpreted as a pictographic rendition of a primitive form of the panpipes, making it possibly the earliest evidence for the existence of this instrument. The earliest textual reference to the *xiao* is found in the poem *You Gu*, from the *Zhou Song* (Hymns of Zhou) in the *Shi Jing:* "Well

prepared they began to play, raising the *xiao* and the *guan* [pipes] in readiness." In archaeological excavations, however, finds of panpipes have been rare. One of the earliest representations of the instrument, showing a figure playing panpipes, appears on an Anatolian relief (ca. 700 B.C.) in the collection of the Louvre in Paris.[8] In China parts of possibly four bamboo panpipes, loosely scattered among the grave goods, were excavated from the tomb of a nobleman of the Huang state dating before 648 B.C. at Baoxiangsi, Guangshan, Henan Province. An example of panpipes with thirteen stone pipes was recovered from a Chu tomb of the late sixth century B.C. at Xiasi, Xichuan (fig. 4.7), also in Henan Province.[9] Marquis Yi's panpipes are the only other and the best preserved ones known from this period.

Each of the two panpipes that formed part of Marquis Yi's court ensemble is composed of thirteen bamboo pipes arranged in increasing diameters and

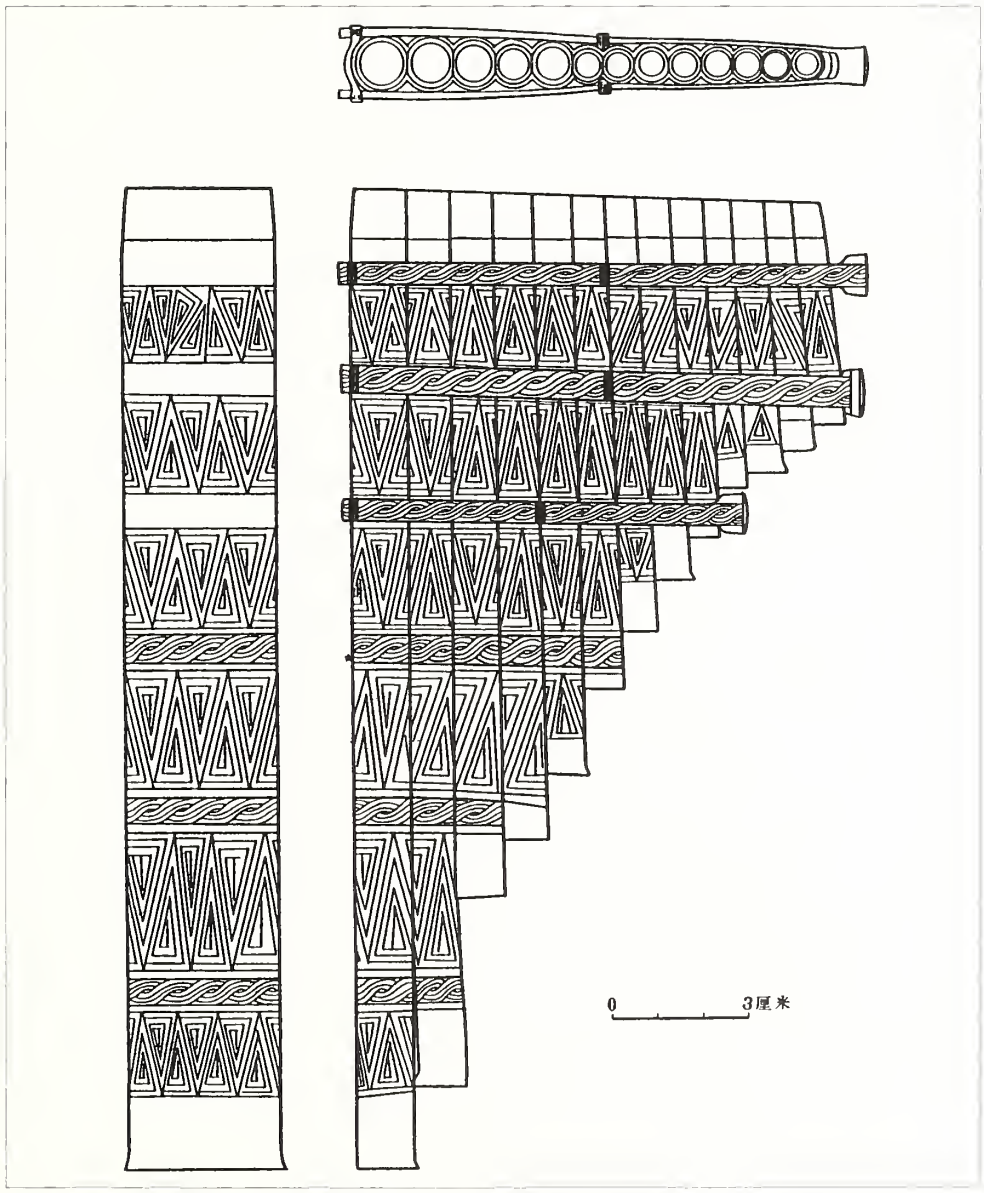


Fig. 4.8 Drawing of thirteen-pipe panpipes (*xiao*) from the tomb of Marquis Yi of Zeng, shown in figure 4.2. After Huang Xiangpeng 1996, Hubei: 287.

lengths (see fig. 4.2). The bamboo used is of the variety *Pleioblastus maculatus.* One end of the pipes is stopped by the tissue at the bamboo's node. All thirteen pipes are tied with strings and three thin strips of bamboo. The pipes are lacquered black and decorated with angular volutes and twisted rope patterns in delicate red and yellow lines (fig. 4.8). The painted twisted-rope design suggests an earlier, more primitive method of binding the pipes with actual ropes. Most panpipes were designed to be held with both hands,[10] with the open ends of the pipes pressing against the lower lip of the player. The shaping of the player's lips is similar to that of a flute player, as he or she slides the panpipes along the lips to blow across the different pipes. Judging by Han dynasty depictions, the bass pipes can be on either the left or right, perhaps according to the player's preference. The sixteen-pipe bamboo instruments from the Tang dynasty (618–907) kept in the Japanese imperial treasure house, the Shōsōin at Nara, have beveled openings. The marquis's panpipes have straight openings, suggesting that they may not have performed fast-moving melodies, since the straight edge of the pipes would have injured the lower lip if they were moved swiftly back and forth.

The *Yi Ji* chapter of the *Shang Shu* (Classic of historical documents) from the first millennium B.C., describes the sound of the *xiao,* "When the melody of Shao [played on the] *xiao* nears the climax, the phoenix arrives to join the celebration," implying that the music of the panpipes was so beautiful that even the fabulous phoenix was attracted to it. It is possible that the first panpipes were originally designed to attract birds. As they evolved from a hunting device to a musical instrument, they became an important part of court and religious ceremonies. In the Zhou dynasty (1050–221 B.C.), there was a series of six performances known as "Music and Dance of the Six Dynasties" (the legendary Yellow Emperor, two sage kings Yao and Shun, and the Xia, Shang, and Zhou dynasties). Of the six, the Shao of Shun and the Da Xia of the Xia dynasty (?—ca. 1600 B.C.) supposedly used panpipes as the lead instrument, a sign of their importance in Zhou music. An entry in the *Chunqiu Zuo Zhuan* (Spring and autumn annals, dating from 722 to 468 B.C.), notes that Prince Jizha of Wu, after watching a performance of the Shao in the state of Lu, commented that it represented "the height of perfection, as all-encompassing as the heavens and as rich as the earth." As mentioned in Chapter 1, Confucius was reportedly so moved by a performance of the Shao that for three months he "did not notice the taste of the food he ate," so overwhelmed was he by the beauty of its music.

Although ancient records indicate that panpipes were popular during the Zhou dynasty, the instrument became especially widespread in the subsequent Han dynasty. It was a key instrument in *gu chui,* the military music of the Han through Wei and Jin periods (206 B.C.–A.D. 420), that included the drum, bell, panpipes, and flute. On Han dynasty pictorial representations, panpipes players seem always to be the most numerous in equestrian or other ensembles. The

music they played was for processions to celebrate military victories. During the Han dynasty, panpipes were also popular among the common people. The *Han Shu* (History of Han, biography of Zhou Bo) records that in Zhou Bo's early years of poverty, he earned his living by playing the panpipes at funerals. During the Eastern Han period (A.D. 25–220), maltose peddlers also reportedly played panpipes to attract customers.

Evidence of panpipes in later periods can be seen in wall paintings in Buddhist caves. Of all the wind instruments portrayed in the wall paintings from the Han through Song periods at Kucha, Xinjiang Province, the panpipes appear most often.[11] In the Mogao Caves at Dunhuang, Gansu Province, more than three hundred panpipes are portrayed on wall paintings dating from the fifth through the fourteenth century.[12] The earlier examples resemble the panpipes from Marquis Yi's tomb. From the eighth century on, especially the tenth through the fourteenth century, most panpipes were rectangular with long pipes arranged symmetrically on both edges. After the Song dynasty (A.D. 960–1279), panpipes disappeared from popular contexts and were used mainly in court music. In modern China, they are used as the emblem for music.

Panpipes are also remarkable for having a wide geographic distribution throughout the world. They were introduced from China to Korea, Japan, and Thailand during the Tang dynasty. They were also the most ancient and widely used musical instrument in Europe. Today, English Punch-and-Judy shows still use them for background music. In Romania and Hungary, panpipes (called *nai*) are common, popular folk instruments. It is interesting that panpipes in ancient China were also once called *nai.* This may be the result of migration of the Huns (Xiongnu) from China's northwestern frontiers to the Hungarian plains during the first centuries A.D. Panpipes are also popular among the Indians of South America, with the best-known examples found on the Andean plateau. They are known as *antara* in Peru, *rondador* in Ecuador, and *siku* in Bolivia. In Africa, there is a type of instrument that consists of a number of single-tone flutes tied together, which can also be considered as part of the panpipes family.[13]

THE MOUTH ORGAN (*SHENG*)

The only wind instrument included in both court and chamber ensembles buried with Marquis Yi is the mouth organ (*sheng*). It is a reeded wind instrument, more complex than most wind instruments, consisting of a hollow body usually made of gourd or wood with a blowpipe extending from it (see fig. 4.3). Additional pipes, usually each with a bamboo reed inside, are inserted into holes made in the body. Since the mouth organ's sound is produced by the vibration of the reeds inside each pipe, these can be regarded as the instru-

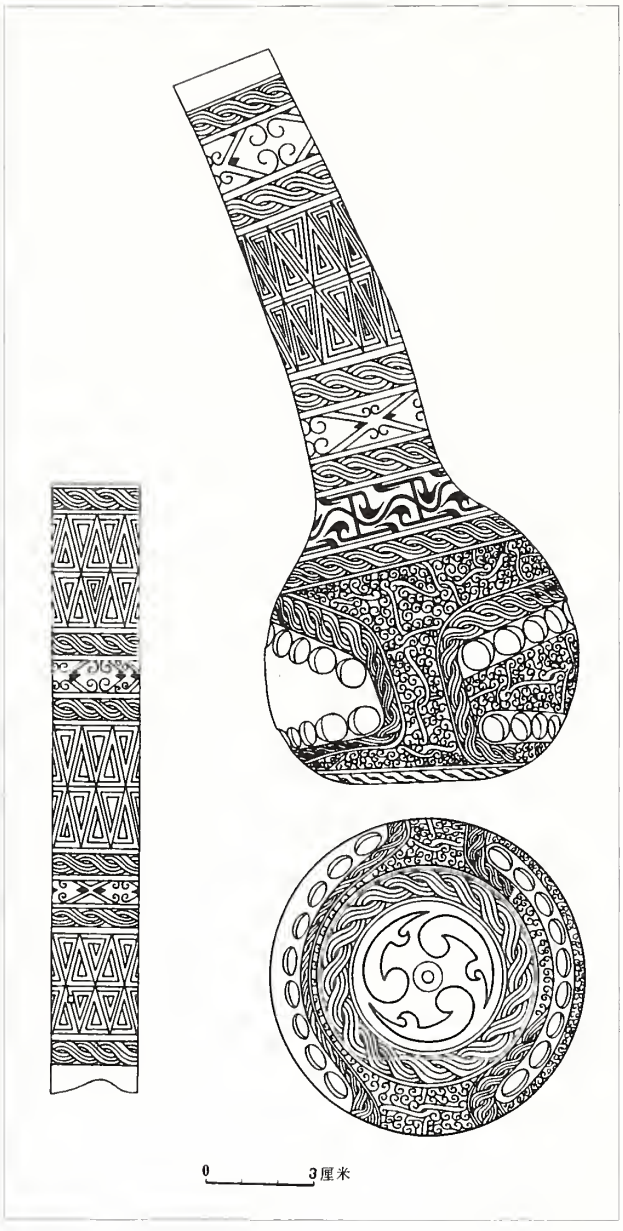


Fig. 4.9 Drawing of eighteen-pipe mouth organ (*sheng*) from the tomb of Marquis Yi of Zeng, shown in figure 4.3. After Huang Xiangpeng 1996, Hubei: 285.

ment's heart and soul. Based on studies of graphs in oracle-bone script, the mouth organ came into being during the Shang dynasty, some three thousand years ago.[14] The majority of excavated instruments came from the ancient territory of the Chu state in Hubei and Hunan Provinces. Others came from sites in Yunnan and Guizhou Provinces in southwestern China.[15] So far, the earliest mouth organs have been recovered from a Chu tomb of the sixth century B.C. at Zhaoxiang, Dangyang, Hubei Province.[16]

Development of the mouth organ can be followed from two perspectives: its material and the number of pipes. On early instruments, a hollow gourd was used for the body; on later instruments, wood replaced gourd for the body. From the sixth and fifth centuries B.C., the gourd body of the mouth organ was made with a mold — a young gourd was inserted into a tubular mold forcing its upper section to grow long and narrow. Its lower section, allowed to grow naturally, would be full and rounded. After the gourd was harvested, the tubular section would be cut across the top to form the pipe for blowing, and the spherical lower section would become its air chamber. Using a complete gourd had the advantage of creating the pipe and air chamber out of a single piece, precluding any leakage of air, a potential problem if the two parts were separate and had to be joined together. The disadvantage was that it took a long time for the gourd to grow into the desired shape. The six mouth organs from Marquis Yi's tomb all have one-piece, mold-grown gourd bodies. The individual reeded pipes were made of bamboo, each with fingering and air holes and a reed (*Arundo donax L.*) inserted into its base (fig. 4.9). Noteworthy is a bronze, gourd-shaped mouth organ excavated from Tomb 24 (second to third century B.C.) at Lijiashan, Jiangchuan, Yunnan Province.[17] It reproduces the shape of a naturally grown gourd in metal, suggesting that apart from the mold-grown technique, more primitive mouth organs might have been made from the natural fruit.

Gourd molding persisted through the fourth century B.C. when a new method used a combination of turned wood for the blow pipe and gourd for the air chamber. Of the six mouth organs excavated from Tomb 1 (fourth century B.C.) at Tianxingguan, Jiangling, Hubei Province, four were made in one piece and two were made by joining gourd and wood.[18] The Freer Gallery of Art

Fig. 4.10 Remains of gourd body and separate wood blow pipe of mouth organ (*sheng*) from Changsha, Hunan Province. Fourth century B.C. Freer Gallery of Art Study Collection, Smithsonian Institution, FSC-X-22.

of the Smithsonian Institution in Washington, D.C., has an example of a two-piece mouth organ, recovered from Changsha, Hunan Province, in the 1930s, constructed of a wood blow pipe with a gourd body that probably dates to this period (fig. 4.10). The two-piece construction was more convenient, because the instrument maker could take any fully grown gourd to make its body without having to wait for it to grow into the required shape in its mold. But if the blow pipe and the body were improperly joined, its sound would be compromised.

Mouth organs whose bodies were made entirely of wood also first appeared during the fourth century B.C. All were nonfunctional, however, and made only for burial.[19] These funerary instruments foreshadowed the all-wood mouth organs of the subsequent centuries, such as a large example from the second century B.C. found in Tomb 1 at Mawangdui, Changsha, Hunan Province, in which both tube and body were made of wood.[20] The latter two types — combining wood and gourd, and all of wood — are still made today. However, local tribes in modern-day southern China continue to use gourd only for the body. Although mouth organs with bronze bodies also appeared during the last centuries B.C. in Yunnan Province,[21] the type was not widespread. It was not until several decades ago that metal mouth organs came to be mass produced.

On the matter of the number of reeded pipes used in the mouth organ, archaeological evidence does not agree with historical records. According to the *Shuowen Jiezi,* an etymological dictionary by the Han scholar Xu Shen (ca. A.D. 30–124), the small mouth organ (*sheng*) had thirteen pipes while the large mouth organ (*yu*) had thirty-six. In Guo Pu's annotation of the *Er Ya,* a lexicon of classical terms compiled in the second century B.C., the *sheng* had thirteen or nineteen pipes. To date, all excavated mouth organs from Chu sites have even-numbered pipes: a sixteen-pipe mouth organ from Tomb 5 (sixth century B.C.) at Caojiagang, Dangyang, Hubei Province;[22] twelve, fourteen, and eighteen pipes on Marquis Yi's instruments (see fig. 4.3);[23] ten on the *sheng*s from Tomb 394 at Yutaishan and Tomb 1 at Zaolinpu;[24] and eight on the instrument from Tomb 4 at Liujiawan, all fourth-century B.C. burials in Jiangling, Hubei

Province.[25] On all these instruments, the pipes are inserted in the body in two parallel rows, with the holes of one row in line with those of the second. The same is true of the twenty-two-pipe mouth organ from Tomb 1 (second century B.C.) at Mawangdui, Changsha, Hunan Province.[26] However, the seven pipes of the bronze mouth organ from Lijiashan in Yunnan Province are arranged in two staggered rows, three in front and four in the rear.[27] In summary, it is apparent that the smaller mouth organ (*sheng*) with fewer pipes preceded the larger *yu* with more pipes.

Ancient mouth organs used bamboo reeds, which emitted relatively soft sounds. This enables us to understand why Duke Huan of Qi (fifth century B.C.) reportedly wanted an ensemble of three hundred players. In ensemble playing, the philosopher Han Fei (ca. 280–233 B.C.) notes that the *yu* is the leader among the five categories of instruments: "Thus the *yu* begins and the bells and *se* follow; the *yu* sounds, and the remaining instruments play in tune with it" (*Han Feizi*), indicating the central role of the mouth organ. This may explain why it was the only wind instrument represented in the marquis's chamber ensemble.

The mouth organ is an instrument that has continued to be used and improved upon in China from its early beginnings down to the present day. It is found mainly in China and neighboring countries in Southeast Asia. Professional musicians in modern China prefer a wide range of new and improved models, while more primitive versions remain deeply rooted in folk music and are particularly popular among minority peoples such as the Yi, Wa, Lahu, Lili, and Miao tribes in southern China.

Notes

1. Li Chunyi 1996: 354–61.

2. *Kaogu* 1983, 1: 31–42; also Li Chunyi 1996: 2–4.

3. On one flute the nodal diaphragm was open at the time of excavation. It is unclear whether it had been pierced on purpose.

4. Wu Zhao 1981.

5. Fang Jianjun 1996: 129.

6. *Wenwu* 1974, 7: 44, pl. 14:3; *Wenwu* 1978, 1: 17, fig. 26; Guangxi 1988: 56, fig. 48.

7. Liu Lesheng 1992: figs. 2-3-2, 2-4-4.

8. *Gakki shiryō-shū* 9: 71, fig. 137.

9. *Kaogu* 1984, 4: 328, fig. 29:3–5; Huang Xiangpeng 1996, Henan: 14–16. For an additional example — disintegrated panpipes from Shanxi, north of the Yellow River — see Li Chunyi 1996: 372–73, table 87.

10. In Han dynasty pictorial reliefs, a player sometimes holds panpipes with one hand while playing another instrument with the other (for example, see Huang Xiangpeng 1996, Hubei: 168).

11. Zhou Qingbao 1994: 161, 192.

12. Zheng Ruzhong 1988: 10.

13. Nketia 1974: 92–94; see also Sadie 1980, 1: 13–14.

14. Tong 1982–84: 175ff.

15. Li Chunyi 1996: 413–23.

16. *Wenwu* 1990, 10: 31.

17. *Kaogu xuebao* 1975, 2: pl. 15:2; Li Chunyi 1996: no. 69.

18. *Kaogu xuebao* 1982, 1: 97, pl. 205; Li Chunyi 1996: no. 68; Huang Xiangpeng 1996, Hubei: 152–53.

19. Examples include those excavated from the Chu state cemetery at Yutaishan and Zaolinpu, both in Jiangling, Hubei Province (Huang Xiangpeng 1996, Hubei: 152–53).

20. Li Chunyi 1996: 417–19.

21. *Kaogu xuebao* 1975, 2: pl. 152; Li Chunyi 1996: no. 69.

22. *Kaogu xuebao* 1988, 4: 483, fig. 29.

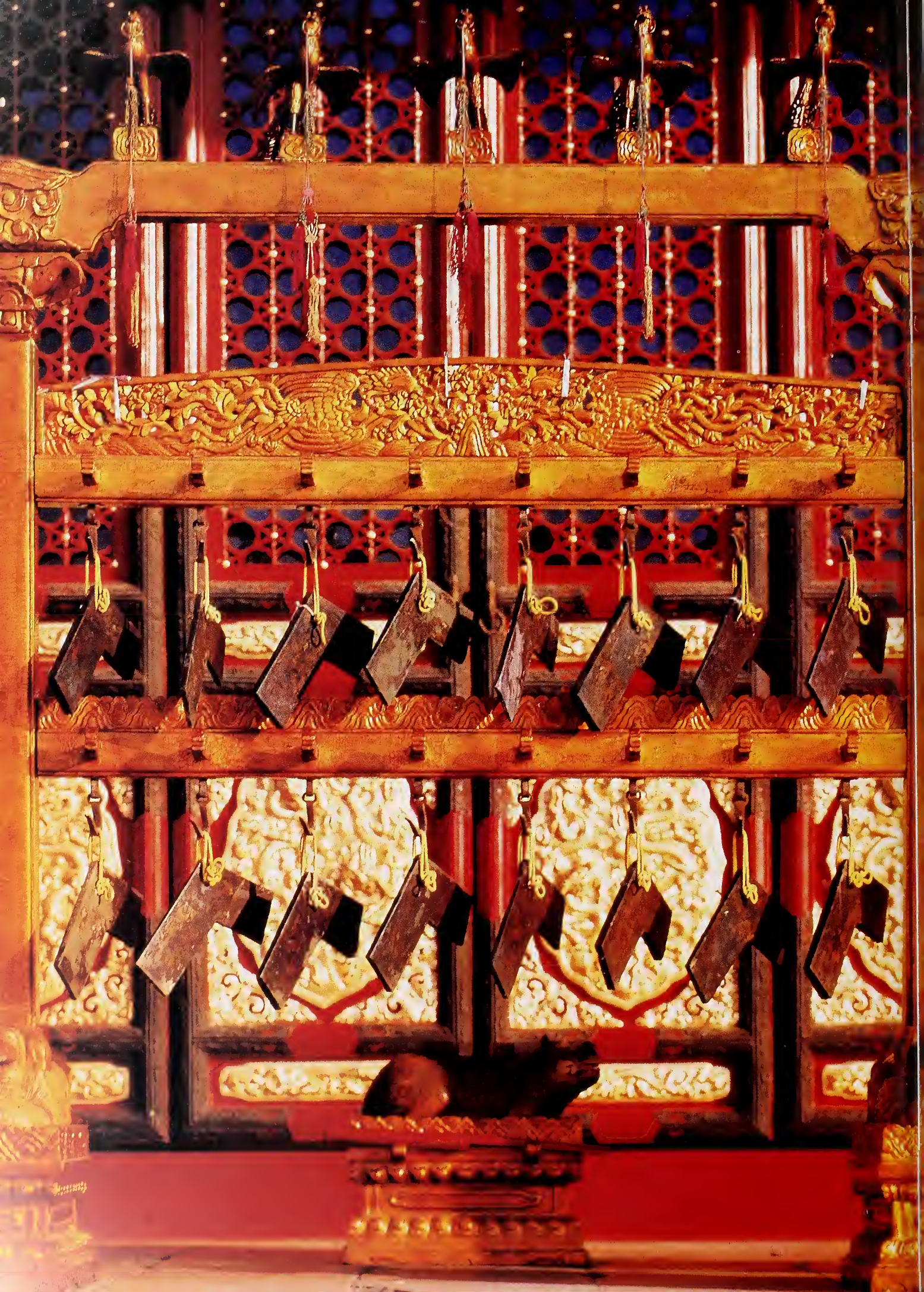
23. Huang Xiangpeng 1996, Hubei: 284–85.

24. Ibid., 152–53.

25. Ibid., 153.

26. Li Chunyi 1996: 416, fig. 245; pl. 67. Since the blow pipe and tubes are not hollowed out, this is also a nonfunctional, funerary instrument.

27. *Kaogu xuebao* 1975, 2: pl. 15.2; Li Chunyi 1996: no. 69.



FIVE | The Zeng Hou Yi Finds in the History of Chinese Music

LOTHAR VON FALKENHAUSEN

WHAT, IF ANYTHING, was new about the music represented by the instruments and inscriptions from the tomb of Marquis Yi of Zeng (Zeng Hou Yi; died ca. 433 B.C.) at Leigudun, Suizhou, Hubei Province? And how much of the rich and sophisticated music performed at Marquis Yi's court survived into later times? These questions can be explored from several angles.

ENSEMBLES AND GENRES

Musical instruments found archaeologically in China almost always constituted part of the ritual paraphernalia by which members of the ruling elite displayed their rank and privileges.[1] It is very likely that other kinds of music, less closely tied to politics, existed during the Neolithic (ca. 7000–2000 B.C.) and the Bronze Age (2000–500 B.C.), but they have left few traces. The musical instrument assemblage from Marquis Yi's tomb is exceptional in part because it affords a glimpse into the diversity of musical genres in elite settings during the final centuries of the Zhou dynasty (1050–221 B.C.).[2] The bell chimes, stone chimes (or lithophones), mouth organs, flutes, panpipes, zithers, and drums constituting Marquis Yi's ritual ensemble were deployed, together with sets of bronze sacrificial vessels, in the tomb's central chamber, which corresponds to the main ceremonial courtyard or hall of his palace. The tomb's eastern chamber, equivalent to the marquis's private residential quarters, contains another, smaller assemblage of mouth organs, zithers, and a tambourinelike drum, which were probably used for a very different form of musical entertainment (see Chapter 1).

Throughout the history of Chinese music, musical entertainment was closely linked to folk music and dance, which were highly diverse, if we can trust the testimony of early texts. The *Shi Jing* (Classic of poetry) from circa 1000–600 B.C. for instance, preserves the texts of 160 poems, folk songs, and ritual hymns from fifteen different places in the Zhou kingdom, allegedly representing different styles of music performed at the royal court.[3] As the tunes have long been lost, we no longer know what the musical differences were.

Zhou ritual music differed from folk music and the musical entertainment of noblemen and rulers in being quite uniform. Archaeological evidence confirms that its musical instruments were the same throughout the Zhou cultural sphere. In time, such music became increasingly staid and sterile. Much to the dismay of their court ritualists, rulers during the turbulent Warring States Period (ca. 480–221 B.C.) preferred the quicker pace, jaunty rhythms, and ever-changing variety of folk music. This loss of interest in the traditional ritual music accompanied the demise of the Zhou aristocratic order, to which the rituals were inextricably connected. The ever-widening gap between ritual music and musical entertainment is one overarching theme in the complex history of music in China during the imperial era (221 B.C.–A.D. 1911).[4]

Among the various new genres of music mentioned in written sources, some — such as the intimate and deeply intellectual *qin*-zither music practiced by scholars[5] — seem to have emerged from indigenous roots (for a different view of the *qin*, see Chapters 1, 3). Others were introduced from outside the Chinese cultural sphere, most notably Central Asia. These exotic musical styles completely changed the sound of Chinese music, as foreign performers brought new instruments such as lutes, harps, and, later on, oboes and fiddles. In a process extending over many centuries, exotic and indigenous elements merged into the various genres of traditional Chinese folk music existing today. The music and dance of minority peoples continue to occupy a place of special importance on the Chinese musical scene. In the regional music styles of contemporary China one cannot confidently distinguish features of Bronze Age origin from later accretions; hence the musical entertainment genres intimated by the instruments from Marquis Yi's residential chamber are probably beyond any hope of recovery.

In investigating later Chinese music for possible traces of what was performed at Marquis Yi's court, we are thus constrained to focus on ritual music, which is generally perceived as conservative. And indeed, even in late imperial times, the constellation of instruments in musical ensembles performing at formal occasions strongly resembled that of the Zhou ritual ensemble. Whether the music bore any resemblance to that heard at Marquis Yi's court is, however, quite uncertain in view of the many changes that occurred during the intervening centuries.

Assemblages of musical instruments excavated from tombs datable to the

Preceding page: set of sixteen jade chime stones on gilt wood rack used for Confucian ritual performances at the Qing imperial palace. Qing dynasty (1644–1911). Palace Museum, Beijing. After Huang Xiangpeng 1996, Beijing: 26.

Fig. 5.1 Scene of a musical ensemble accompanying acrobats. Excavated in 1969 from Tomb 1 at Wuyingshan, Ji'nan, Shandong Province. Painted terra-cotta. Second to first century B.C. After *Wenhua Dageming* 1972: 125.

late Warring States, Qin (221–206 B.C.), and Han (206 B.C.–A.D. 220) periods reflect the shift in musical tastes from ritual to entertainment. They consequently tend to resemble the ensemble found in Marquis Yi's residential chamber. While most kinds of instruments from the Zhou court ensemble remained in use, there was a steep decline in the number and technological sophistication of bell chimes and stone chimes, which had been the most prestigious and rank-specific instruments. Their use, moreover, may no longer have been limited to ritual occasions. This is suggested by textual evidence as well as by Han dynasty pictorial and sculptural representations that illustrate bells, drums, zithers, and mouth organs accompanying acrobatic stunts at banquets (fig. 5.1).[6] So little of the orthodox ritual music of the Zhou was extant by Han times that its court specialists had to re-create the dynasty's ritual music entirely anew, their efforts guided by the intention to preserve the spirit of the Zhou tradition. Such music was probably limited to the imperial court, where a special "Office of Music" oversaw both ritual and nonritual music, retaining a sizable staff of musicians and technicians.[7]

The next significant rupture occurred in A.D. 316, when invading tribes from the north conquered the capital of the Western Jin dynasty (A.D. 265–316). The imperial court musicians fled south, leaving their instruments behind.[8] The subsequent reconstruction of ritual music under the Southern Dynasties (A.D.

317–589) appears to have been in large measure based on the classical texts, which are notoriously vague on details of musical practice. Frequent reforms of court music during later dynasties were similarly informed not by musical considerations but mostly by divergent understandings of the scriptures. Thus by the time of the Tang dynasty (A.D. 618–907), ritual court music probably had become quite different from Han or earlier practices.

During the Song dynasty (A.D. 960–1279) conscious attempts were made to revive the ritual music of the Zhou tradition.[9] During this period Confucian learning had increasingly assumed the characteristics of a religious cult, complete with temples and sacrifices to Confucius, for which scholars sought to recreate the grand and edifying music enjoyed by the Master during his own lifetime. Alongside textual sources, these scholars began to consider archaeological evidence. The discovery in A.D. 1104 of a set of Eastern Zhou period (771–221 B.C.) *bo* bells from the state of Song (regarded as auspicious because the reigning dynasty happened to bear the same name as that ancient state) became the touchstone for a major project of casting new bell chimes at the imperial court.[10] Dispersed during later regimes, some of these bells are still in existence (fig. 5.2). Comparison with Bronze Age specimens reveals that, while they resemble Eastern Zhou bells in shape and ornamentation, their numbers and, more importantly, their acoustic and musical characteristics differ vastly from those prototypes. While such instruments and the ensembles to which they belonged must have evoked to their public the appearance and atmosphere of ancient rituals, it is unlikely that the music performed bore significant similarity to that played by Marquis Yi's ritual ensemble.

The ritual music performed during court ceremonies and in Confucian temples under subsequent dynasties derived from the Song reconstructions. One innovation was the use of cylindrical bells in the imperial palaces and temples of the Qing dynasty (A.D. 1644–1911), which may have been designed under the influence of Jesuit missionaries.[11] Qing ritual music was still performed in the early twentieth century. It was stately and dignified, as suited the contexts of its performance. But unlike the music played on the instrumental assemblages from Leigudun, it did not emanate from a living musical tradition. We may assume that the authentic Zhou ritual music, however much it may have bored some of its listeners in the Warring States Period, was incomparably more varied, complex, vibrant, spontaneous, and emotionally charged.

Present-day performances on instruments of the ritual ensemble in China, such as at Confucius's hometown of Qufu, Shandong Province, seem quite removed from Qing practice. That music uncannily reflects the influence of artificial Soviet-style folk music of the 1950s. In Taiwan, a version of Confucian ritual music is being kept alive as a form of folklore. Traditional Chinese-style ritual music may also still be heard in Korea, where the reconstructed ritual music of the neo-Confucian scholars has been cultivated since the turn of the

Fig. 5.2 Bronze bell (hangers damaged and missing). Northern Song dynasty, twelfth century. Height 24.1 cm. Collection of the Walters Art Gallery, Baltimore (54.2185).

twelfth century A.D.[12] Over the centuries, a separate and highly idiosyncratic tradition of performance has arisen, which, though influenced by indigenous Korean traditions, may preserve features of Song or earlier ritual music that were subsequently lost in China (fig. 5.3).

TIMBRE AND TUNING

A central concern throughout the history of traditional Chinese music was the sound effects specific to the materials from which each kind of musical instru-

Fig. 5.3 Ritual ensemble in performance during a Confucian ritual at the Songgyŏnggwan Confucian Academy in Seoul, South Korea, August 1984. Photograph by Lothar von Falkenhausen.

ment was made. The *Zhou Li* (Rites of Zhou; third century B.C.) classifies instruments under categories known as the "Eight Sonorous Substances" (*ba yin*): metal (bells), stone (chime stones), clay (ocarinas), leather (drums), silk (zithers), wood (wooden percussion instruments), gourd (mouth organs), and bamboo (flutes).[13] This list determined the combination of instruments in ritual ensembles during the Song and later dynasties. Its historical validity is problematic, however.

In the first place, archaeological discoveries show that instruments were by no means always made of the material under which they were classified. For instance, flutes could be made of bone, wood, or even stone, rather than of bamboo. Second, the material by which an instrument is classified does not always actually determine the instrument's timbre. A mouth organ, for example, renders the timbre of its pipes, not its gourd-shaped resonating body. Third, none of the known assemblages of instruments so far discovered by archaeologists contain all of the "Eight Sonorous Substances." The ensemble from the central chamber in Marquis Yi's tomb, the richest known to date, only comprises six of the eight, lacking clay and wood. Clay ocarinas have been found in Neolithic and Bronze Age contexts, but never together with other instruments; they seem to have been played on their own rather than forming part of ritual ensembles. As for wood, the *Shi Jing* mentions two terms that have been traditionally understood to denote wooden striking-basins and tiger-shaped scraping instruments. That none have ever been found archaeologically may be accidental, but it is also possible that these objects were mere display props, which the *Zhou Li* authors construed as musical instruments for the sake of their schematization. In the absence of early depictions, one might even

speculate that instruments of the wood category were not made until sometime after the Han dynasty.

It appears that the authors of the ritual classics arrived at the "Eight Sonorous Substances" by arbitrarily collating all references to musical instruments in the *Shi Jing* regardless of their disparate contexts. The set of eight was intellectually attractive because it could be correlated with a host of other standardized phenomena; by means of such speculations, late Eastern Zhou and Han thinkers believed they could explain the functioning of the cosmos.[14]

Though ahistorical and artificial, the material-based classification is useful for highlighting an aesthetic concern central to Chinese ritual music. When we examine the development of instrumental ensembles through time, it becomes obvious that the relative importance of timbre was particularly great in the earliest period. Musical ensembles from the Neolithic Period until approximately the ninth century B.C. were dominated by percussion instruments,[15] whose musical effect relied principally on their crashing sounds. By contrast, the pitch of their notes may have been of comparatively little importance, with such parameters as melody and musical scales playing but a limited role. Alongside rhythm, timbre may have effectively contributed to the rousing quality of early Chinese music.

After the middle of the Western Zhou period (1050–771 B.C.), the emphasis in ritual music gradually shifted from timbre to an increased concern with melody and exact tuning. By Marquis Yi's time, timbric effects had become subordinated to the melodic flow of musical pieces, and a great deal of attention was paid to coordinating the pitch of different kinds of instruments. Of course, some instruments were inherently more amenable than others to exact tuning and the playing of melodies. Consequently, wind and string instruments assumed the leading role in defining the shape and pitch of musical pieces, while drums and other percussion instruments provided rhythmic and timbric accompaniment and, when necessary, enhancement of volume. Bell and stone chimes occupied an intermediary position on this continuum of melodic and accompanying instruments. Although they had originally been percussion instruments mainly appreciated for their specific timbric quality (as is explicit in some Western Zhou bell inscriptions), they developed into fully melodic instruments as the number of components in each chime increased.[16]

A concern with increasingly exact tuning is evident from frequency measurements on bell chimes. Western Zhou chimes are seriously out of tune; this is obvious from their lack of internal consistency, even though we do not know what mathematical tuning standard their casters used. Over time, however, tuning became much more exact, especially in Marquis Yi's bell chimes; but even they, while admirable for their high degree of consistency, are far from perfect. Certainly this development reflected technical progress specific to the production of bell chimes, which are more difficult to tune than most other kinds of

instruments. But the increased importance of exact tuning is also intimated in the tone-defining inscriptions on Marquis Yi's bells and by the discovery of sets of pitch pipes for use in unifying the pitch in musical ensembles from fourth and second century B.C. contexts.[17]

The abandonment of two-toned bells during the Warring States Period may similarly have had to do with the impossibility of tuning such bells exactly, for whenever one adjusted the pitch of one of the two tones, the other would also change uncontrollably (discussed in Chapter 2). The chimes of one-tone bells in use after the fourth century B.C. were much easier to tune and to play than the technologically more sophisticated two-tone bell chimes, especially those from Marquis Yi's tomb. Sets of bell chimes had by then lost their status-defining function, and their musical importance in ritual ensembles also diminished.

During the imperial era, especially after the neo-Confucian revival under the Song dynasty, the preoccupation with exact tuning often overshadowed the performance of ritual music. This inspired some important scientific work whose resulting insights were applied to the manufacture of musical instruments, such as in the casting of the Qing bell chimes. Efforts at improving the sound of traditional ensembles have continued into the modern era. Chinese as well as Western connoisseurs have been critical that some melodic instruments — especially mouth organs and zithers — are not loud enough to stand out against the percussive accompaniment and that the piercing sound of high-pitched flutes sometimes disagreeably dominates the acoustic effect. In attempting to create a more balanced sound, contemporary performers have changed the number of instruments and introduced "improved" versions by using new materials and adopting certain Western features.[18] The result, albeit acoustically pleasing to modern listeners whose preferences are, even in China, conditioned by exposure to Western-style music, is far removed from historical precedent.

Of course, it is unlikely that the Bronze Age listeners perceived the imbalances criticized by modern audiences. What they did hear is not entirely certain since the exact numbers of instruments in Bronze Age ensembles are unknown. This is true even of Marquis Yi's ensemble, both because the central chamber of the tomb appears to have been broken into before excavation and because the number of instruments buried in tombs may not have been the same as that used by the living.

MELODY, TEMPO, AND RHYTHM

We know very little about the melodies played by musical ensembles during Marquis Yi's time. Like almost all traditional music in China today, however, the ritual music appears to have been based on pentatonic sets, consisting of the

notes *do, re, mi, sol, la.* This much is evident from the tone distribution in those musical instruments from the Bronze Age that can still be subjected to acoustic measurement. That chime stones and panpipes were exclusively pentatonic seems incontrovertible because such instruments feature one distinct component for each intended note. In bell chimes, at least during the five centuries down to Marquis Yi's time, each bell was designed to produce two tones. Tone-distribution patterns are somewhat more complicated, but they also invariably feature a pentatonic core. More complex tone distributions such as those on Marquis Yi's bells should probably be interpreted as enabling the performance, not of melodies using more than five notes per octave, but of pentatonic melodies in several tonalities (*xuangong*).[19]

Another reason for the presence in Marquis Yi's chimes of more tones than were needed for the performance of pentatonic music may have been that a complete inventory of notes was deemed desirable for cosmological reasons. Similar extramusical considerations may also explain the tone distribution in Song dynasty and later chimes of sixteen bells, which were designed to produce a chromatic gamut of notes over one and a half octaves, even though the melodies played on them were invariably pentatonic.

Both Marquis Yi's bell inscriptions and the very scanty descriptions of musical pieces in texts from the Eastern Zhou period suggest that instrumental pieces progressed *unisono,* with the same tones played simultaneously in different octaves. Each instrument played whatever tones it could of a given tune, with some versatile instruments possibly adding nonpentatonic embellishments; repetitions were played by different combinations of instruments, thus adding richness and variation. On the other hand, there was probably little attempt to combine harmonically related tones, and almost certainly no notion of polyphony or counterpoint. The latter two features remain largely absent from present-day traditional Chinese music as well.

While something can thus be said about timbre and scales, the crucial dimensions of tempo and rhythm in Marquis Yi's court music remain entirely elusive. The music performed in Korea and China on traditional ritual ensembles in the twentieth century is stately, measured, and may seem to nonspecialist Western listeners almost unbearably slow and monotonous, but this may not have been true during earlier times. Some modern scholars have offered tentative reconstructions of Zhou musical pieces based on the song shapes of the *Shi Jing* or on alleged structural similarities to a type of court music of the Tang dynasty still played today in Japan, *gagaku,* another genre of music notable for its extreme slowness;[20] but these are not easily verifiable. Possible parallels to other surviving folk or other musical traditions, especially in Southeast Asia (such as the Indonesian gamelan) remain to be explored. At present, however, little can be known with any certainty about the sound of ritual music in pre-imperial China, severely constraining the possibility of comparison with later music.

Unlike Western staff notation, the shape of a melody is not visually apparent in any of the numerous traditional systems of musical notation from China. Those systems consist of sequences of symbols, usually modified forms of Chinese characters (fig. 5.4), that render the notes of a melody and sometimes, as in the case of zither music, also include stipulations on how to play each note.[21] In contrast, rhythm is virtually never indicated; neither usually is the pitch range at which a given note is to be played. Though players would seem to have considerable leeway for individual interpretation, in practice, the way they handle aspects not indicated by the notation usually follows conventions absorbed in the course of musical training.

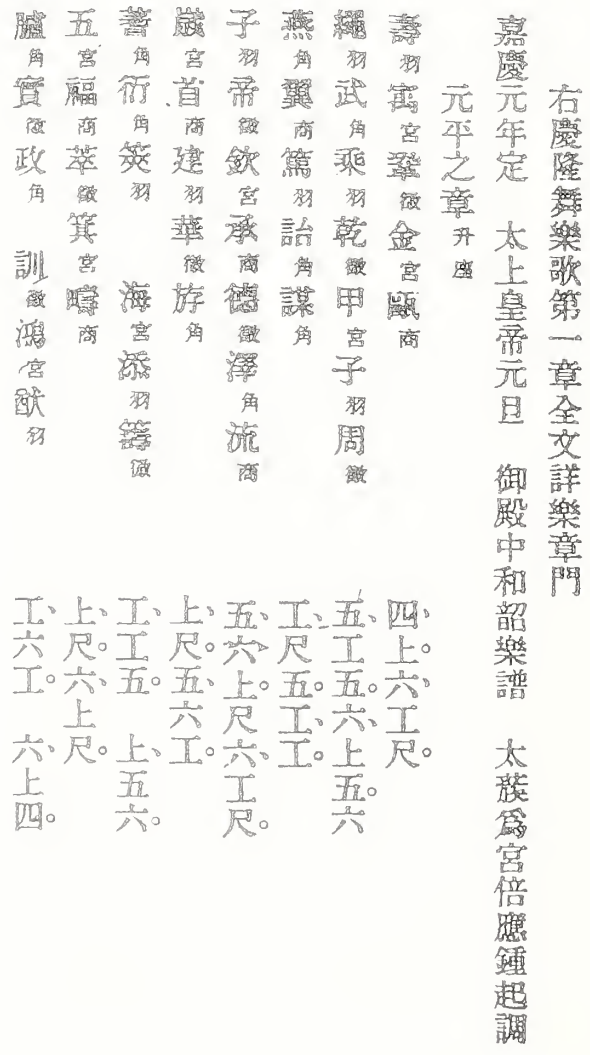


Fig. 5.4 Example of *do-re-mi* notation; portion of the score for the Shao music sung at dawn of the New Year's Day, as fixed in 1796. From *Qingchao xu wenxian tongkao* 199 (after Xue Zongming 1981: 104).

The earliest existing musical notations in China were found in a cache of medieval manuscripts in a Buddhist cave temple at Dunhuang, Gansu Province. They date to the Tang dynasty. It is certain, however, that some form of notation of musical pieces existed much earlier, since "tone compositions" (*shengqu*) for "seven songs from Henan dating to the Zhou" and for "seventy-five folk-ballads dating to the Zhou" are listed in the inventory of the Han imperial library;[22] none of these has, however, been preserved, and we know nothing about the notation system used. The only instance of a possible musical notation from antiquity is of the percussion accompaniment of the ritual game of *touhu* in the *Li Ji* (Records on ritual) compiled from earlier sources during the first century A.D.[23] It contains only two symbols "○ □," the exact significance of which is unknown; they may indicate either a rhythmic pattern or the alternation of two drums (fig. 5.5).

In view of the sophistication of the musical assemblage from Marquis Yi's tomb, it seems likely that a method, or methods, for writing down musical pieces existed in the fifth century B.C. The names of the notes recorded in the inscriptions on Marquis Yi's bells (twelve notes per octave, with additional indications of pitch differentiation) could have served such a purpose quite effectively. In fact one of the many musical notation systems current during the Qing dynasty, the so-called "*do-re*[*-mi*] notation" (*gongshangpu*), consists of note names in small print underneath each word of a song.[24] Its usage in antiquity is not yet attested, however. Since archaeological work in China has brought to light increasing numbers of early manuscripts with texts of

many different kinds, we may be cautiously optimistic that pertinent evidence could emerge some day.

To complete our comparison of the music played at Marquis Yi's court with the ritual music of later dynasties, we must briefly look at musical theory. Early Chinese music-related texts typically either give sweeping and vague expositions on moral and aesthetic issues or become preoccupied with cosmological correlations (see Chapter 1).[25] By contrast at Leigudun, information pertinent to theory is provided on the musical instruments themselves. As noted in Chapter 2, the inscriptions on Marquis Yi's bells name the two notes playable on each bell in relation to fixed pitch standards. An approximate Western analogy would be the definition of a tone as "*do* with respect to E, *re* with respect to D, *mi* with respect to C," and so forth; in some instances, the inscriptions give up to six such expressions for the same tone. As in traditional Western music theory, there are twelve notes per octave, complemented by a twelve-part set of twelve pitch standards. The musical theory reflected in Marquis Yi's bell inscriptions differs from the slightly later accounts in the Chinese classics in that the two dimensions of each tone — note and pitch standard — are kept clearly apart as two separate dimensions of each tone; later on, the two were increasingly confounded (as were the *do-re-mi* and C-D-E gamuts in the West).[26]

Moreover, Marquis Yi's bell inscriptions show for the first time that each state used a different set of names for the pitch standards (though not for the notes, apparently). The fixing of pitch standards is known to have been a matter of governmental decree in traditional China — one of the actions by which a dynasty declared its legitimacy. Marquis Yi's bell inscriptions correlate the pitch standards of at least five states, most prominently those of Zeng and its power-

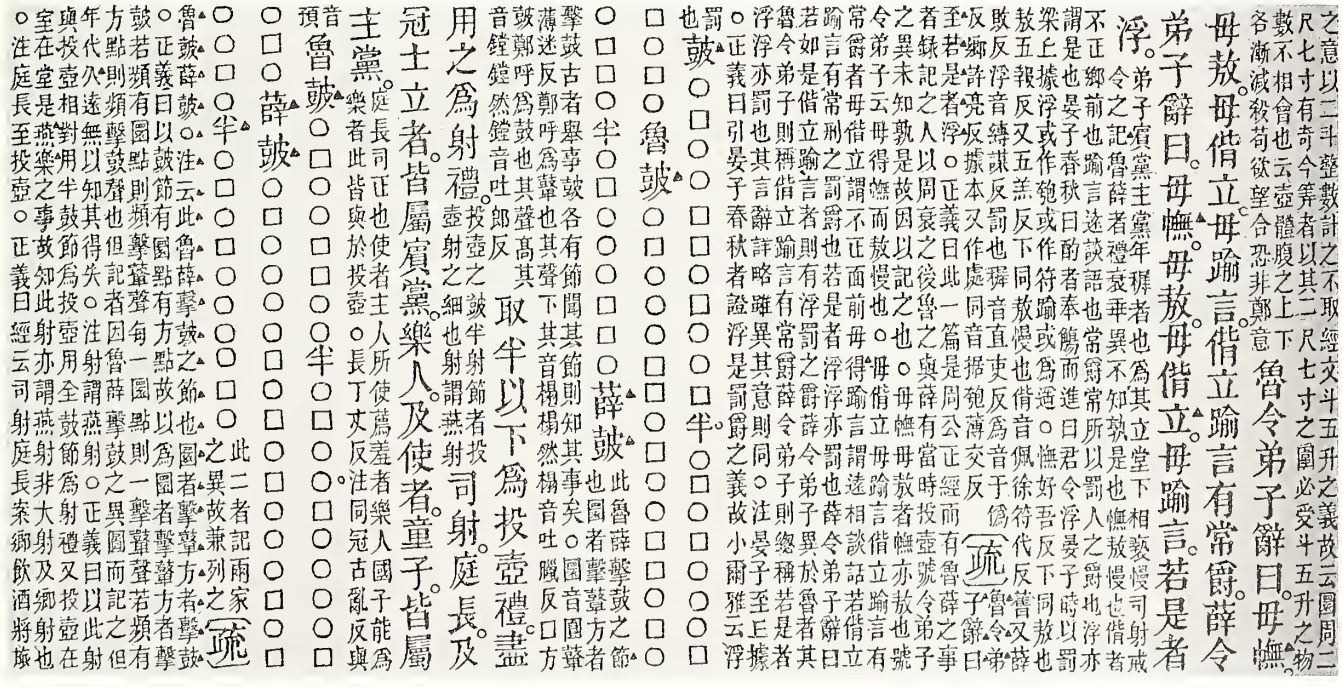


Fig. 5.5 Notation for the drum accompaniment to the ritual game of *touhu*. From *Li Ji Zhushu* (*Shisanjing zhushu* ed.) 58: 10b–11a.

ful neighbor, the kingdom of Chu. The Zeng pitch standards are similar to those transmitted in the late Eastern Zhou and Han period classical texts, which may have been those of the Zhou royal court. In contrast, Chu used a different nomenclature (see fig. 2.28). This may reflect the fact that the ruling house of Zeng belonged to the same clan as the Zhou royal family, whereas Chu was bent on emphasizing its rivalry with the Zhou. For all its political significance, the use of these different pitch-standard nomenclatures probably made very little difference musically or acoustically.

Marquis Yi's bell inscriptions bear witness to a strong interest on the part of Zeng musical theorists in patterned correlations. Their intended function is somewhat mysterious. They could not have served for the players' reference during performance, since the most detailed tone names are inscribed on the back sides of the bells, not visible to the performing musicians. Their main importance was likely an intellectual one, perhaps aimed at furnishing acoustically verifiable information of cosmological relevance. In other words, theory was at best marginally relevant to musical performance. If theory applied at all, it was only to ritual music, which as we have seen already occupied a special position in the musical universe at the time. Musical entertainment, by contrast, was in all likelihood untouched by theory of any kind. Similar disjunctions between theory and practice, and between music regarded as correct and music perceived as enjoyable (see Chapter 1), were to continue to characterize Chinese music throughout its later history.

Notes

1. For detailed discussion and further references, see Falkenhausen 1988; Falkenhausen 1993b.

2. Hubei 1989; Falkenhausen 1993b: 5–12.

3. For a readable English translation, see Waley 1937; for an analysis emphasizing musical aspects see Wang 1974; for more technical consideration of the musical features of the songs, see Picken 1969, and Picken 1977.

4. For good general treatments of Chinese musical history in Western languages, see Picken 1957; Needham et al. 1962; DeWoskin 1982; Picard 1991.

5. See Gulik 1969a; Goormaghtigh 1990.

6. For literary references, see for example *Chu Ci "Zhao hun"* (*Chu ci buzhu*, 9: 10b–12a) and *Shi Ji "Qin Shihuang benji"* (*Shi Ji*, 257); for pictorial depictions, see Huang Xiangpeng 1996, Henan: 160–99; *Wenhua Dageming* 1972: 125.

7. Loewe 1974: 193–210. It is now known that a similar office already existed in Qin times (Falkenhausen 1988: 111).

8. Boltz n.d.

9. Pian 1967.

10. Chen Mengjia 1964; Rudolph 1948; for further references, see Falkenhausen 1988: 494, n. 31.

11. For examples of case studies on Ming and Qing dynasty ritual music, see Lam 1996 and Rawski 1996; on bells, see Falkenhausen and Rossing 1998.

12. Pratt 1976; Pratt 1981; Provine 1996.

13. *Zhou Li "Chunguan: Dashi"* (*Zhou Li Zhengyi*, 1832–42). Discussed in Needham et al. 1962: 141–48; Falkenhausen 1988: 61–69.

14. Eberhard 1970: 1–274; Henderson 1984; Major 1993; Poo 1998.

15. As a case in point, more than 75 percent of Li Chunyi's monumental survey of pre-Han musical instruments is taken up by percussion instruments (Li Chunyi 1996); to some extent this reflects differences in preservation.

16. Falkenhausen 1993b: 264–67.

17. Lehr 1988; Falkenhausen 1988: 917–32; Falkenhausen and Rossing 1995.

18. Li Youping, personal demonstration, 1991.

19. Falkenhausen 1993b: 267–76.

20. Picken 1969; Picken 1977; Harich-Schneider 1955.

21. Xue Zongming 1981.

22. *Han shu* "Yiwenzhi" (*Han shu*, 1755).

23. *Li Ji* "Touhu" (*Li Ji Zhushu* 2: 1667).

24. Xue Zongming 1981: 103–4.

25. See Needham et al. 1962; DeWoskin 1982.

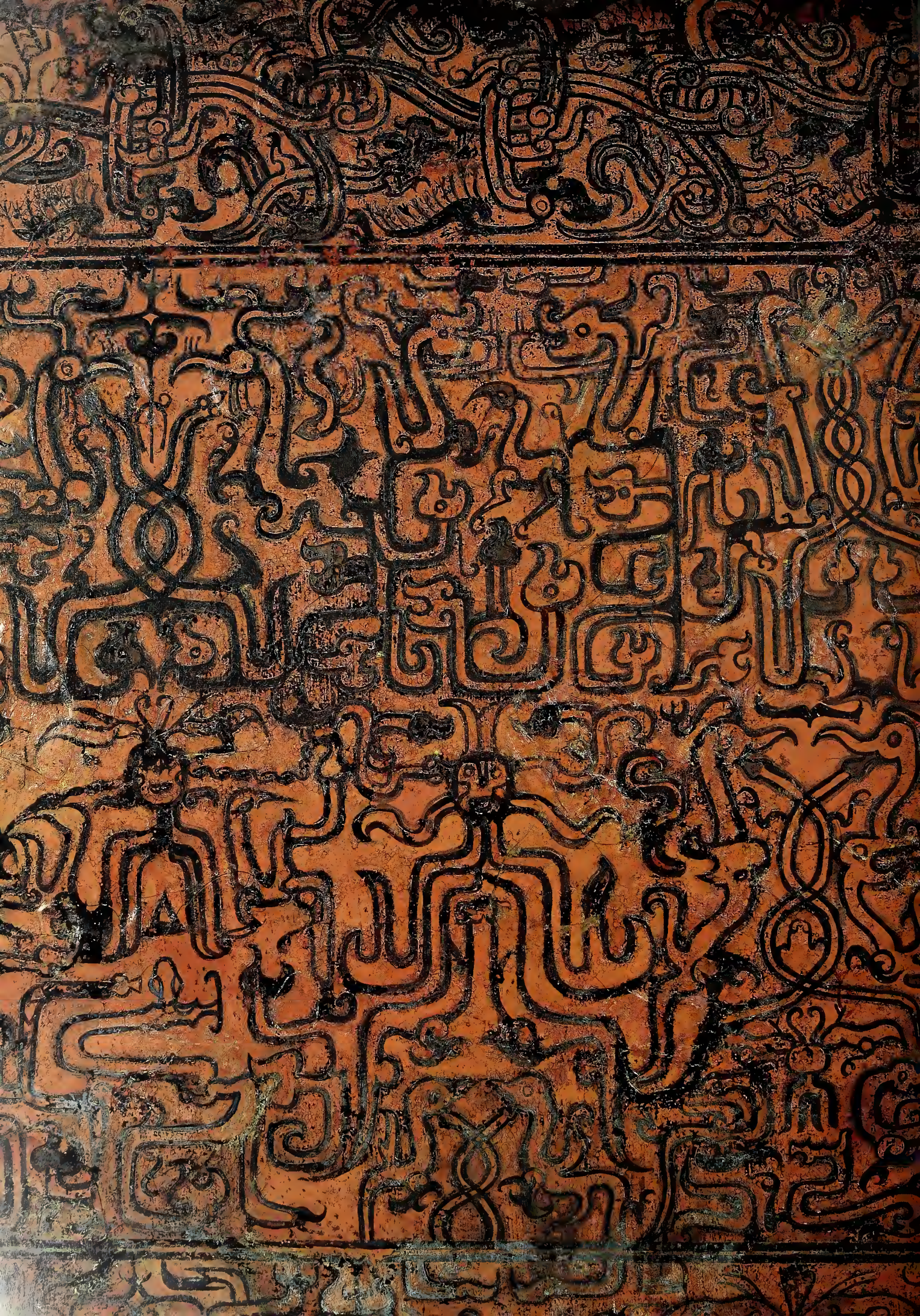
26. Falkenhausen 1992; Falkenhausen 1993b: 280–319.

Chronology

Neolithic Period	ca. 7000–2000 B.C.
Bronze Age	ca. 2000–500 B.C.
Shang dynasty	ca. 1600–1050 B.C.
Zhou dynasty	1050–221 B.C.
Western Zhou	1050–771 B.C.
Eastern Zhou	771–221 B.C.
Warring States Period	480–221 B.C.
Qin dynasty	221–206 B.C.
Han dynasty	206 B.C.–A.D. 220
Western Jin dynasty	A.D. 265–316
Tang dynasty	A.D. 618–907
Song dynasty	A.D. 960–1279
Northern Song	A.D. 960–1127

Map showing major sites, cities, and relative locations of ancient states.

Beijing
Linzi
Qi
Anyang
Qin
Zhou
Lu
Fufeng
Erlitou
Zheng
Xi'an
Wuyang
Chu
Xichuan
Xinyang
Wu Xian
Shanghai
Suizhou
CHINA
Zeng
Chu
Wuhan
Yuyang
Dangyang
Jingmen
Shaoxing
Jiangling
Chu
Yue
Ningxiang
Guixi Xian
Changsha
Xiangtan
Xin'gan
Jiangchuan
Guangzhou
Gui Xian
Hong Kong
Site
City
Chu – Ancient States



Checklist

All the objects listed here were excavated from two adjacent tombs in Leigudun, Suizhou, Hubei Province, People's Republic of China.

Detail of painted designs on the inner coffin of Marquis Yi of Zeng (see Checklist no. 1).

1 Inner of two nested coffins

From the east chamber of the tomb of Marquis Yi of Zeng
Fifth century B.C.
Lacquered wood
Height 132 cm; width 125–27 cm; depth 250 cm
Hubei Provincial Museum
(Illustrated in the text as fig. 1.4)
Photographs of details by Hao Qinjian

■ The inner coffin that held the remains of Marquis Yi is made of heavy timber planks skillfully joined together and covered with layers of lacquer. The base layer of lacquer is red, with the figures outlined in black.

The entire surface of the coffin is covered with an intricate and bewildering pattern of intertwined birds, reptiles, and ambiguous anthropomorphic forms. Reptilian figures include snakes singly and in intertwined double-helix pairs; plumed snakes; "dragons" (i.e. snakes with legs); double-headed snakes; and their variants. Birds are variously plumed, long-tailed, long-billed, short-billed, hook-billed, and even four-legged; some appear to grip reptilian creatures (often intertwined snakes) in their beaks (detail b). Most of these figures are relatively small, but at the foot end of the coffin are two much larger, elaborately plumed birds. Each stands on the backs of quadrupeds that may represent the Green Dragon of the East and the White Tiger of the West. Snakes, a lizard or salamander, and a fish surround them (detail a).

detail a

Interspersed among all these reptiles and birds are anthropomorphic images with masklike faces (or wearing masks), elaborate headdresses, and sketchily drawn bodies, characterized by long arms and legs in wavy patterns that suggest empty, trailing sleeves and trouserlegs rather than actual limbs (see detail b). In some cases their legs metamorphose into intertwined serpents. Though roughly anthropomorphic, these images almost certainly represent nonhuman beings of some kind, whether gods (*di*), spirits (*shen*), immortals (*xian*), ghosts (*gui*), or perhaps even human shamans in an altered state of consciousness, possessed by their familiar spirits.

The bird-and-serpent motif is a visual allusion to the Chinese belief in dualistic phenomena such as *yang-yin*, hot-cold, and heaven-earth. The impression of these pictorial areas on Marquis Yi's coffin is that of an energy field of *qi*, pulsating with contending *yin* and *yang* forces and populated with otherworldly beings that seem to emerge, quantumlike, from the flux. It is impossible to know in detail what these images meant to their contemporaries, but the sense of cosmic energy seems unmistakable.

The two sides of the coffin, divided into pictorial panels, display a more structured scheme than that found on the ends. Some show bird-and-reptile motifs similar to those on the coffin ends (see details a, b). Each side has one panel containing four squares, each divided into a central square surrounded symmetrically by four trapeziums (see fig. 1.4). These figures are related to schematic cosmographic diagrams on silk documents excavated from Changsha, Hunan Province.[1] Here, they seem to be stylized depictions of a center surrounded by the four directions. The eight squares on the two sides, plus a similar one at the foot end of the coffin, make a total of nine schematic squares, recalling the nine

Left, detail b
Right, detail c

provinces or continents into which the ancient Chinese believed the world was divided.[2] If this interpretation is correct, the square figures would perhaps have been intended as a kind of map to orient the deceased in the afterlife.[3]

Flanking the panels of four squares on each side of the coffin, as if guarding them, are a total of ten anthropomorphic figures (six in one panel, four in the other). They wear elaborate headdresses and masks (or have oversized masklike heads) and elaborate costumes; two are shown with wings, feathers, and birdlike tails, conventional attributes of immortals. Each holds a double-headed halberd (*ge*) and stands in the formal, displayed posture of guards (detail c). But their vigorous stance also suggests that they may be performers of a war dance like that described by the Confucian philosopher Xunzi in the third century B.C., in which court gentlemen danced with shields, battle-axes, and ritual implements decorated with feathers and yaktails, while being accompanied by stone chimes and flutes. Whatever their identity, these figures must represent supernatural beings of some sort, or humans taking the roles of such beings, comparable to other Chu images of gods and supernatural beings as depicted on the famous "Chu Silk Manuscript" recovered from Changsha. One other iconographic feature, found only on the coffin's west side, remains a mystery: four reptilian birds, perhaps cormorants, above the six "guards." The birds are shown fully frontal, in an almost heraldic posture, standing on their tail feathers (detail c).

The extravagant and complex decoration of Marquis Yi's inner coffin bespeaks a world of religious beliefs and practice that, while inaccessible to us in detail, gives us an impression of the reverent awe for the god- and spirit-haunted universe that underlay the funerary practices of early China.

Notes

1. Fu Juyou and Chen Songchang 1992: 145.

2. See Major 1984.

3. It has long ago been suggested that texts in tombs were intended as maps to the other world (Hulsewé 1965).

2 Group of thirty-six bells, modern stand and suspension devices

From Tomb 2 at Leigudun, Suizhou, Hubei Province
Late fifth century B.C.
Bronze, lacquered wood
Height of largest bell 96.3 cm, of smallest bell 30 cm; weight of largest bell 79.5 kg, of smallest bell 4.5 kg
Suizhou City Museum, Hubei Province
(Illustrated in the text as fig. 2.25)

■ The tones produced by these bells seem to be scattered randomly over the four octaves between the lowest bell and the highest. They often cluster with four or more in the space of a single semitone.[1] Lacking any substantial stretch of tones spaced at well-tuned musical intervals, the set may never have been used in musical performance. If it was, only a few carefully selected bells could have been played in any one piece of music. Eight bells are substantially larger than the other twenty-eight and are differently decorated; a gap of about half an octave separates the large bells from the small ones. The eight large bells themselves fall into two distinct groups of four bells each, discussed separately on the following pages.

Note

1. See Falkenhausen and Rossing 1995: 467.

Bell no. 92 from Tomb 2 at Leigudun, with a detail of the decoration near the mouth.

Height 80 cm, weight 38.4 kg.
Photograph of bell by Hao Qinjian; photograph of detail by John Tsantes.

The bell has an octagonal stem with a loop for suspension. The rows of blunt spikes that project from the upper part of the body are a regular feature of Zhou bells. It has sometimes been argued that the spikes have an acoustic function, but their omission from the twenty-eight small bells in this tomb (see Bell no. 88) and also from one of the subsets in Marquis Yi's tomb (fig. 2.8) argues that some casters, at least, did not consider them essential. The surface decoration is mostly a kind of gritty texturing derived from dragon interlace designs; it was cast from pattern blocks that allowed a small unit of decoration to be replicated indefinitely. A decipherable motif appears only in the irregular panel of decoration near the mouth, where a staring animal face with bulging nose and lozenge-shaped eyes can be made out at the top center of the panel.

detail

detail

Bell no. 93 from Tomb 2 at Leigudun, with a detail of the decoration near the mouth.

Height 87.5 cm, weight 46.75 kg.
Photographs of bell and detail by Hao Qinjian.

Four of the eight large bells resemble this one; four resemble the bell shown in detail a. The principal difference between the two groups is the decoration in the panel near the mouth. In this bell the top center of the panel contains not an animal face but a human or semihuman figure posed frontally. The figure holds writhing snakes and seems to sit astride some sort of animal, but this animal and the remainder of the design are very difficult to decipher. A single pattern block appears to have supplied this panel for the front and back of all four bells. In other words, the panel was replicated from a single original, and it therefore does not vary in size from one bell to the next though the bells themselves do vary. The extremely unusual design might be connected in some way with the decoration painted on a lacquered-wood, five-stringed instrument from Marquis Yi's tomb, which includes human figures flanked by snakes (see fig. 3.5 detail a). Marquis Yi's red lacquer coffin is painted with a wild jumble of similar designs (see fig. 1.4 detail).

Bell no. 88, one of twenty-eight small bells from Tomb 2 at Leigudun, with detail of decoration.

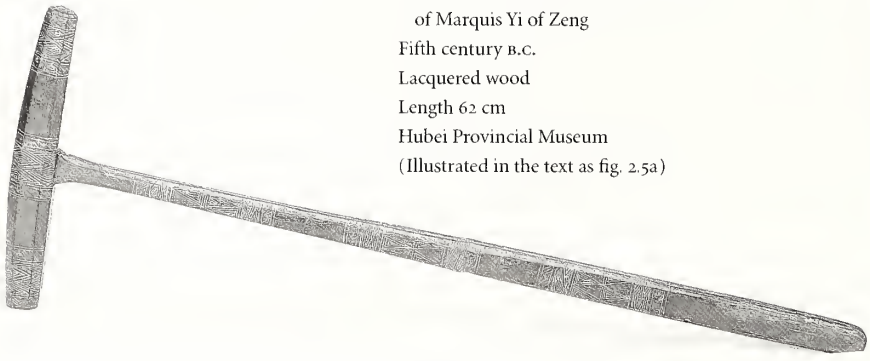
Height 42.8 cm, weight 8.6 kg.
Photograph of bell by Hao Qinjian; photograph of detail by John Tsantes.

Less well cast than the large bells, the small bells range from 30 cm to 43.5 cm high (five of them were found inside one of the large bells). Their most interesting feature is the decoration of the upper part of the body, which has panels of five low circular bosses in place of the usual rows of spikes. This unusual feature is otherwise known only from the bell which the Chu king cast for Marquis Yi (fig. 2.4). Perhaps that bell had such prestige that it was taken as a model by the casters of these smaller and cruder items.

detail

3A Mallet, one of six for playing the middle-tier bells

From the central chamber of the tomb
of Marquis Yi of Zeng
Fifth century B.C.
Lacquered wood
Length 62 cm
Hubei Provincial Museum
(Illustrated in the text as fig. 2.5a)

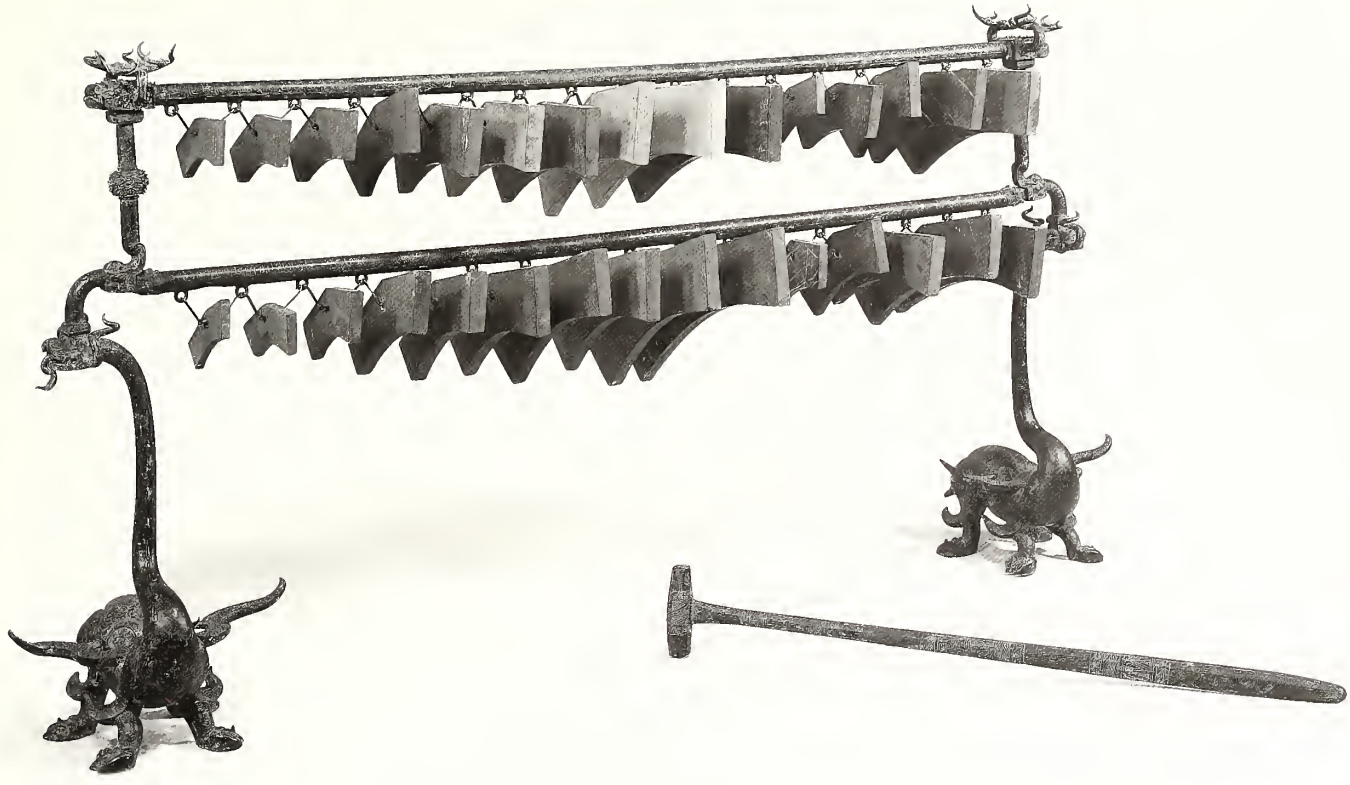


Detail, painted designs on
head of mallet.
Photograph by John Tsantes.

3B Pole, one of two for playing the lower-tier bells

From the central chamber of the tomb
of Marquis Yi of Zeng
Fifth century B.C.
Lacquered wood
Length 215 cm; diameter 6.6 cm
Hubei Provincial Museum
(Illustrated in the text as fig. 2.5b)

Detail, painted designs on
one section of pole.
Photograph by Hao Qinjian.



4 Thirty-two chime stones (replicas), rack, and mallet

From the central chamber of the tomb of Marquis Yi of Zeng
Fifth century B.C.
Limestone, gold-inlaid bronze rack
Total length of rack 215 cm; height 109 cm
Hubei Provincial Museum
(Illustrated in the text as fig. 2.22)

Detail, painted designs on head of mallet.
Photograph by John Tsantes.

■ The stones are a variety of limestone. Two mallets that might have been used to play them were found at the other end of the chamber, next to the large drum. In the tomb, the rack was set up with the two supporting animals oriented toward the south; the player would have sat behind the rack, between it and the north wall of the chamber. Each bar of the rack has positions for sixteen stones, i.e., just over three octaves of a pentatonic scale. The stones were found suspended on the rack with the *do* and *sol* stones on each bar grouped together at the player's left, the *re, mi,* and *la* stones at the player's right, perhaps because this arrangement in some way facilitated playing, perhaps for some theoretical reason. The stones bear tone-defining inscriptions that specify their pitches (see figs. 2.23a, b); they are also numbered in pitch sequence. Their inscriptions do not mention Marquis Yi, but his name does appear on the tongue of one of the bronze animals that support the rack.

Fig. 2.24 is a drawing of one of the three wooden boxes in which the chime stones were kept when they were not being played. The slots in the box have numbers corresponding to the sequence numbers on the chime stones. The inscription on the lid reads "Guxian shi shi you san zai ci [Guxian stones, thirteen are within]." Guxian is the name of a reference pitch approximately equal to C. The lid of the second box bears the inscription "Xinzhong yu shaoyuzeng zhi fan shi shi you si zai ci [Xinzhong stones and the upper-octave *yuzeng* stone, fourteen are within]." Xinzhong is the name of a reference pitch approximately equal to F-sharp, and the box has numbered slots for thirteen stones belonging to the pentatonic scale on F-sharp. The fourteenth slot is for a stone with the pitch [Xinzhong zhi] *yuzeng*, which belongs neither to the F-sharp nor to the C pentatonic scale; it is one of the additional notes needed to fill out the chromatic scale. The third box held all the other notes needed to fill out the chromatic scale, along with the very largest stones of the C and F-sharp scales. The same size as the other two, it is labeled "Jianyin shi shi you si zai ci [Intermediate-note stones, fourteen are within]."

5 Drum base, with replica drum and pole, part of court ensemble

From the central chamber of the tomb of Marquis Yi of Zeng
Fifth century B.C.
Bronze inlaid with turquoise, lacquered wood
Overall height 365 cm; diameter of drum at drumheads 74 cm; height of base 54 cm; diameter of base 80 cm; weight of base 192.1 kg
Hubei Provincial Museum
Photographs by Pan Bingyuan.

■ The drum measures 106 centimeters end to end. It is supported on a wooden pole that puts the center of the drum about 1.7 meters above floor level. The pole, held in a bronze base, passes through the drum and extends 1.5 meters above it. Its tip is lacquered black, the rest of the pole and the drum itself lacquered red. The drumheads, which have not survived, were secured by rows of bamboo tacks. Two drumsticks evidently meant for this drum are sixty-four centimeters long and lacquered black.

The base takes the form of a flurry of dragons, sixteen large ones varied in size and type and at least as many small ones clinging to or biting them. It was made in twenty-four pieces cast separately and then soldered together. The bronze has tarnished and the turquoise inlay has mostly fallen out; the original color would have been a spectacular combination of blue and gold. The inscription "Zeng Hou Yi zuo chi [Marquis Yi of Zeng made this, cherish]" is cast on the horizontal lip of the socket for the wooden pole.

6 Flat drum, part of court ensemble

(in fragments, with replica)

From the central chamber of the tomb of Marquis Yi of Zeng
Fifth century B.C.
Lacquered wood, bone tacks
Diameter at drumheads 42 cm; distance from drumhead to drumhead 12.5 cm
Hubei Provincial Museum
Photographs by John Tsantes

■ The drum was made from twelve pieces of wood, probably glued together; it was found in pieces. The drumheads were stretched over the body and fastened with bone tacks. The portions of the drumheads stretched over the body were painted with red lacquer, on which patterns were applied in black; the rest of the drum was painted with black lacquer, onto which patterns of interlocked Ts were painted in red. Two wooden pegs in the body may have attached the drum to a stand of some kind.

7 Duck-shaped box

From the west chamber of the tomb of Marquis Yi of Zeng
Fifth century B.C.
Lacquered wood
Height 16.5 cm; width 12.5 cm; length 20.1 cm
Hubei Provincial Museum
(Illustrated in the text as fig. 1.8)

■ This duck-shaped box is made of joined and carved wood covered with black and red lacquer. The head and neck form a separate piece. Its hollow interior is accessible by a lid on the back. The lacquered patterns suggest the duck's plumage without actually imitating it naturalistically.

Fowl and poultry figure often in southern Chinese cuisine during the Zhou dynasty (1050–221 B.C.). The poem *Zhao Hun* (Summons of the soul) in the *Chu Ci* (Elegies of Chu) refers to "geese cooked in sour sauce, casseroled duck, fried flesh of the great crane"; and scenes of duck hunting are common on pictorial bronzes of the period. The plump body of the box suggests a domestic duck rather than a wild one. There is no reason to suppose that this container's shape has any special symbolic significance other than its association with food offerings and banquets.

Two musical scenes are painted on its sides. One of these depicts a drummer and a dancer (see fig. 1.8 detail b). The drummer, appearing more deerlike than human, wields two rounded drumsticks to beat a pole-drum mounted on the back of an animal-shaped base (compare Checklist no. 5). Both figures wear tall, flat-topped hats. The dancer wears a sword and a tunic or jacket, its long trailing sleeves floating in the air as he or she appears to move animatedly with legs akimbo, arms raised and waving, to the beat of the drum.

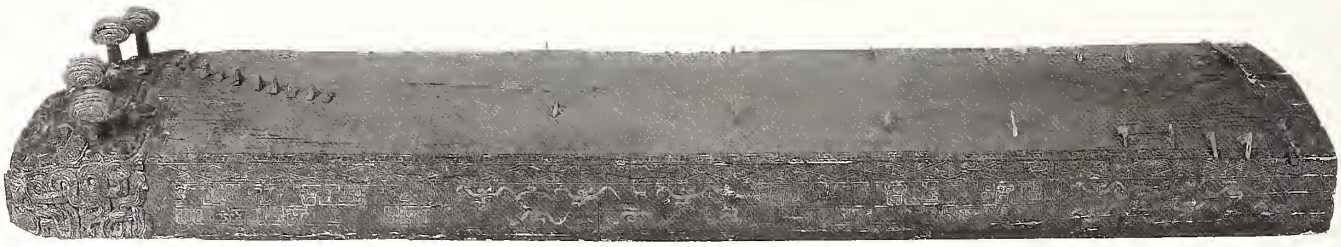
The scene on the opposite side of the container shows a chime of two bells, hung from a beam held in the mouths of two four-legged animals that seem to combine avian, feline, and reptilian features (see fig. 1.8, detail a). One bell is being struck with a long pole (compare Checklist no. 3B) held by a bird-headed (or bird-masked) human-like figure. These two panels may be vastly abbreviated representations of ritual music and dance that would have been performed at banquets to the music of Marquis Yi's bells and drums in his palace.

8 Twenty-five-stringed *se*-zither, part of both court and chamber ensembles

From the central chamber of the tomb of Marquis Yi of Zeng
Fifth century B.C.
Carved lacquered wood
Length 167 cm; width 43 cm; height 12 cm
Hubei Provincial Museum
(Illustrated in the text as fig. 3.2)

■ Like many zithers in the tomb of Marquis Yi, this *se* is extensively ornamented with figurative and geometric motifs. On the left is a mass of entwined snakes, a veritable swarm of vipers (compare fig. 3.3 detail). The sides display double rows of overlapping birds, every second one inverted (see fig. 3.2 detail a). This pattern of birds also decorates the five-stringed *zhu* (see fig. 3.5 detail b). The contrasting colors of black, yellow, and silvery gray on red create an exquisite brocadelike effect.

Four wooden string anchors and three short fixed bridges are located at one end. The fixed bridges divide the twenty-five strings into three sets of 9–7–9. Each string was tuned by placing and adjusting a movable bridge under it along the surface of the instrument. The highest-pitched string in each set was closest to the player, the other strings gradually descending in pitch away from him or her. The set of strings farthest was identical to the nearest set, while the middle set held seven bass strings. To pluck the strings, the player sat at the long side with the string anchors to his or her left.



9 Twenty-five-stringed *se*-zither with wooden bridges, part of both court and chamber ensembles

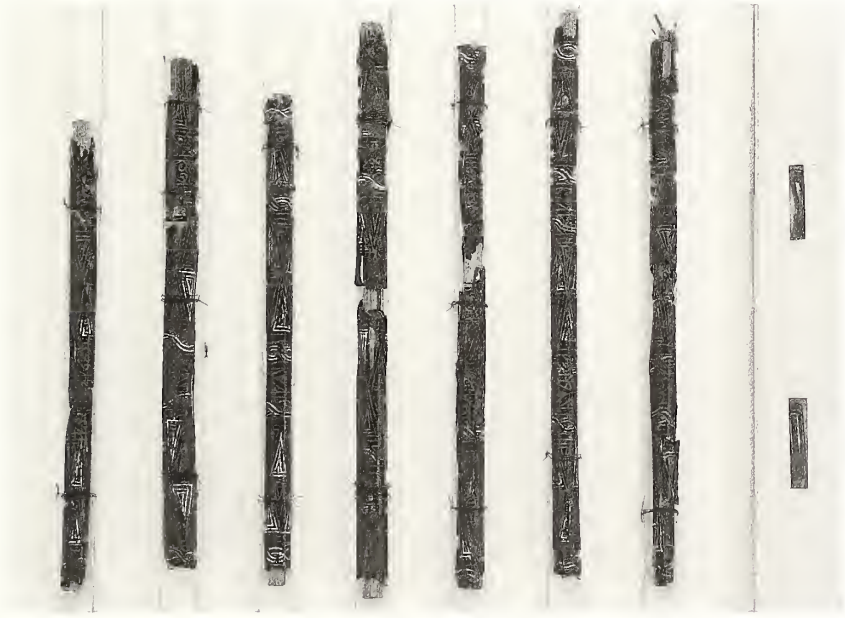
From the central chamber of the tomb of Marquis Yi of Zeng
Fifth century B.C.
Carved lacquered wood
Length 167.3 cm; width 42.2 cm; depth 11.1 cm
Hubei Provincial Museum
(Illustrated in the text as fig. 3.3)

■ The size and decorative motifs on this *se* are virtually identical to figure 3.2. Only the arrangement of its twenty-five strings differ: they are grouped into three sets of 8–8–9.

10 Eighteen-pipe mouth organ *(sheng)*, part of both court and chamber ensembles

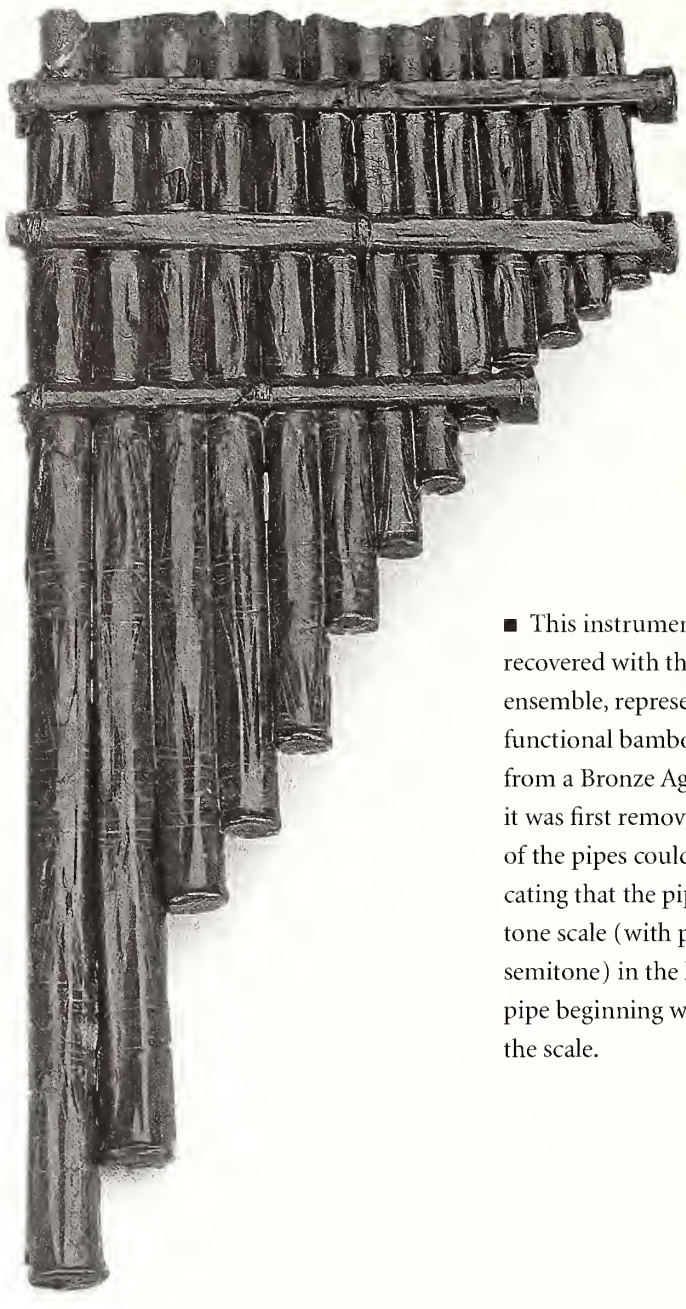
From the eastern chamber of the tomb of Marquis Yi of Zeng
Fifth century B.C.
Lacquered gourd and bamboo
Height of gourd body 22.0 cm; diameter of pipes 0.8–1.1 cm
Hubei Provincial Museum
(Illustrated in the text as fig. 4.3)

■ This mouth organ is the largest and most elaborately decorated gourd-bodied instrument of its kind known. Complex triangular, curled, and twisted braid patterns in red and yellow against a black lacquered ground completely cover the body and all eighteen pipes (see fig. 4.9). None of the surviving pipes has been preserved intact (damaged lengths measure between 27.4 and 6.8 centimeters), so no tone information is available. These seven pipes are the best preserved. Ten reeds for the pipes survived relatively intact (two shown), revealing vibrating diaphragms that range from 2.55 x 0.22 x 0.06 to 1.20 x 0.14 x 0.04 centimeters in size.

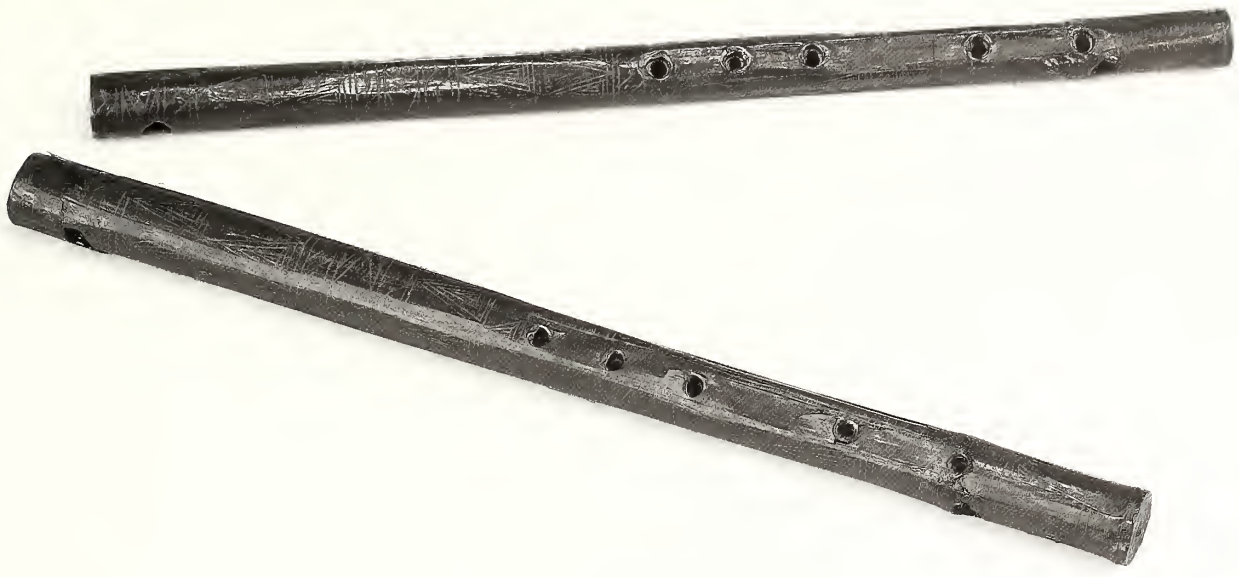


11 Thirteen-pipe panpipes (*xiao/paixiao*), part of court ensemble

From the central chamber of the tomb of Marquis Yi of Zeng
Fifth century B.C.
Lacquered bamboo
Lengths of pipes 22.80–5.20 cm; diameters of pipes 0.85–0.55 cm; maximum width 11.70 cm
Hubei Provincial Museum
(Illustrated in the text as fig. 4.2)



■ This instrument, one of two panpipes recovered with the instruments of the court ensemble, represents the best preserved, functional bamboo panpipes recovered from a Bronze Age context in China. When it was first removed from the ground, eight of the pipes could still produce sound, indicating that the pipes may have played a five-tone scale (with perhaps an additional semitone) in the key of C, with the longest pipe beginning with *sol,* the fourth note of the scale.



12, 13 Two transverse flutes (*chi*), part of court ensemble

From the central chamber of the tomb of Marquis Yi of Zeng
Fifth century B.C.
Lacquered bamboo
Lengths 29.3 cm (above), 30.2 cm (below)
Hubei Provincial Museum
(Illustrated in the text as figs. 4.1a, b)

■ Decorated in red and yellow geometric patterns on a shiny brownish black lacquered ground, these two *chi* flutes are the earliest surviving examples in bamboo known. Experiments using replica instruments show that the marquis's flutes are musically sound and capable of producing *do-re-mi-sol-sol#-la* in the key of F#, or *do-do#-re-fa-sol-la* in the key of C#, or *re-re#-mi-sol-la-ti* in the key of B. This means that the flutes can play a five-tone scale plus one additional semitone.

14 Ten-stringed *qin*-zither, part of chamber ensemble

From the east chamber of the tomb of Marquis Yi of Zeng
Fifth century B.C.
Carved lacquered wood
Length 67 cm; width 19 cm; depth 11.4 cm
Hubei Provincial Museum
(Illustrated in the text as figs. 3.4a, b)

■ Unlike the *se*, this instrument has a more interesting silhouette. Besides the covering of black lacquer, the instrument's surface is adorned with incised marks (see detail), not encountered consistently on the other ancient examples (see fig. 3.8.1). They are unlikely to mark positions where strings were touched. Classical *qin*-zithers, on the other hand, have finger positions marked precisely with contrasting materials inlaid into the top (see fig. 3.8.4). String marks left on the bridge and near the holes suggest that this instrument was well used before it was buried (see detail).

15 Five-stringed *zhu*-zither, part of chamber ensemble

From the east chamber of the tomb of Marquis Yi of Zeng
Fifth century B.C.
Carved lacquered wood
Length 115 cm; width 7 cm; depth 4 cm
Hubei Provincial Museum
(Illustrated in the text as fig. 3.5)

■ Except for the top surface of its sound box, this slender instrument is completely decorated with designs in shiny red and black lacquer (see detail of underside). It is the most elaborately decorated example of its kind known. A small opening at one end of the sound box allows the strings to emerge from the inside to be wound around the single string anchor on top. Parts of the lacquer layer on the underside have lifted from the wood.

16A Flat hanging drum

(in fragments, with replica)

From the east chamber of the tomb of Marquis Yi of Zeng
Fifth century B.C.
Lacquered wood, bamboo tacks, bronze rings
Diameter at drumheads 36 cm; distance from drumhead to drumhead 8.5 cm
Hubei Provincial Museum
Photographs by John Tsantes

■ The rings, one oriented in the plane of the drum and two perpendicular to it, may have served to hold the drum between the antlers of the bronze bird shown as Checklist no. 16B. The drum was made from thirteen pieces of wood, varying in size, probably glued together. It was found in pieces. The drumheads, which did not survive, were stretched over the body of the drum and fastened with bamboo tacks. The body and the portions of the drumheads fastened to it were then painted with black lacquer, to which red lacquer patterns were applied.

16B Fantastic bird

From the east chamber of the tomb of Marquis Yi of Zeng
Fifth century B.C.
Bronze inlaid with gold and turquoise
Height 143.5 cm; base 45 x 41.5 cm; weight 38.4 kg
Hubei Provincial Museum
Photograph by Wang Jichao

■ The side of the beak is inscribed "Zeng Hou Yi zuo chi yong zhong [Marquis Yi of Zeng made this, cherish and use it forever]." The object was cast in eight pieces — body, antlers, legs below the thighs, wings, and base plate. The wings were then permanently attached to the body by soldering. All the other joins are mortise-and-tenon joins that allow the object to be disassembled and reassembled, a construction probably inspired by carpentry (as seen in lacquered wood figures from other tombs of the period). Alain Thote has argued convincingly that this figure was the stand for the drum shown as Checklist no. 16A.[1]

Note

1. See Thote 1987.

Glossary of Chinese Characters

Anyang	安陽	Dalü	大呂
ba yin	八音	Dangyang	當陽
Baihuatan	百花潭	*Dao (Tao)*	道
Baoxiangsi	寶相寺	*di*	笛
Beichulu	貝處魯	*di* (gods)	帝
Beizhai	北寨	Dingjiayaodian	丁家腰店
Bian, Mount	編山	Dongdongkui	咚咚喹
bo	鎛	Dunhuang	敦煌
Bo Ya	伯牙	E'mei Xian	娥媚縣
Cai (state)	蔡	*Er Ya*	爾雅
Caojiagang	曹家崗	Erlitou	二里頭
Changqiao	長橋	Fan Ju	范睢
Changsha	長沙	*feng*	鳳
Changtaiguan	長臺關	Fenshuiling	汾水嶺
Changzhi	長治	Fufeng	扶風
Chengdu	成都	*gagaku* (Japanese)	雅樂
Cheng Lian	成連	Gansu	甘肅
chi	篪	*ganying*	感應
Chu (state)	楚	*ge*	戈
Chu Ci	楚辭	*gong* (musical note)	宮
Chu Ci buzhu	楚辭補注	*gongshangpu*	宮商譜
Chunqiu Zuo Zhuan	春秋左傳	*gu* (string playing technique)	鼓
Da Xia (musical dance)	大夏	*Gu Chui*	鼓吹

Guan Zhong	管仲	Ji Kang	稽康
guan	管	Ji'nan	紀南
Guangdong	廣東	Jiahu	賈湖
Guangshan	光山	Jiangchuan	江川
Guangxi	廣西	Jiangling	江陵
Guangzhou	廣州	Jiangsu	江蘇
Guanzi	管子	Jiangxi	江西
gui	鬼	Jin (period)	晉
Gui Xian	貴縣	Jincun	金村
Guixi Xian	貴溪縣	Jingmen	荊門
Guizhou	貴州	*Jiu Tang Shu*	舊唐書
Guo Pu	郭璞	Jizha	季札
Guo Yu	國語	*jue* (musical note)	角
Guodian	郭店	*jun*	均
Guxian (musical pitch)	姑洗	Jun, Mount	君山
Gu Zhong	鼓鐘	Kongzi (Confucius)	孔子
Haizhou	海州	Kucha	龜茲
Han (dynasty)	漢	Lahu	拉祜
Han Fei (philosopher)	韓非	Leigudun	擂鼓墩
Han Feizi (text)	韓非子	*Li Ji*	禮記
Han River	漢江	*Li Ji Zhushu*	禮記注疏
Hau Shu	漢書	Lianyungang	連雲港
he	和	Lijiashan	李家山
He Ren Si	何人斯	Lili	傈僳
Hemudu	河姆渡	Ling Lun	伶倫
Henan	河南	Lingshui	陵水
Hong Kong	香港	Linzi	臨淄
hu (type of ritual vessel)	壺	Liuchengqiao	劉城橋
Huainanzi	淮南子	Liujiawan	劉家灣
huang	凰	Lu (prince)	潞
Huang (state)	黃	Lu (state)	魯
Huangdi	黃帝	*Lü Shu*	律書
Huangzhong (musical pitch)	黃鐘	Luobowan	羅泊灣
Huan of Qi, Duke	齊桓公	Luoyang	洛陽
Hubei	湖北	Mawangdui	馬王堆
Hunan	湖南	Mengzi (Mencius)	孟子
ji (string playing technique)	擊	Miao	苗

Ming (dynasty)	明	*Shi Jing*	詩經
Mogao (caves)	莫高窟	Shi Zhuan	師涓
Muyin (musical pitch)	穆音	*Shui Jing Zhu*	水經注
nai	籟	Shun	舜
Nan	南	*Shuowen Jiezi*	說文解字
Nanjing	南京	Sichuan	四川
Nanyue Wang	南越王	Sima Qian	司馬遷
nao (type of bell)	鐃	Song (state and dynasty)	宋
Ningxiang	寧鄉	*Song*	頌
paixiao	排簫	Sui (dynasty)	隋
Pinghuang (musical pitch)	平皇	Suibin (musical pitch)	妥賓
qi	氣	Suizhou	隨州
Qi (state)	齊	Taicou (musical pitch)	太簇
qiankun	乾坤	*tan* (string playing technique)	彈
Qijiacun	齊家村	Tang (dynasty)	唐
qin	琴	Taosi	陶寺
Qin (state and dynasty)	秦	Tianxingguan	天星觀
Qing (dynasty)	清	*touhu*	投壺
Qinshihuang benji	秦始皇本記	Wa	佤
Qufu	曲阜	Wageluo	瓦格洛
se	瑟	Wangchengpo	望城坡
se rui	瑟枘	Wei (river)	渭河
Shaanxi	陕西	Wei (state)	魏
Shandong	山東	Wen of Wei, Duke	魏文公
shang (musical note)	商	Wu, King of Zhou	武王（周）
Shang (dynasty)	商	*wu* (musical dance)	武/舞
Shang Shu/Shu Jing	尚書/書經	Wu (state)	吳
Shanghai	上海	Wu Xian	吳縣
Shanxi	山西	Wuhan	武漢
Shao (musical dance)	韶	Wulipai	五里牌
Shaoxing	紹興	Wuyang	舞陽
Shaqiu	沙丘	Wuyi (musical pitch)	無鐸
Shen (state)	申	Wuyingshan	舞影山
shen	神	Wu Zixu	伍子胥
sheng	笙	Xi, River	西江
shengqu	聲曲	Xiyang	西陽
Shi Ji	史記	Xia (dynasty)	夏

Xi'an	西安
xian	仙
Xiangfen	襄汾
Xiang Shui	湘水
Xiangtan	湘潭
Xiao Ya	小雅
xiao	簫
Xiasi	下寺
Xichuan	淅川
Xin' gan	新幹
Xinjiang	新疆
Xinyang	信陽
Xinye	新野
Xiongnu	匈奴
Xishanqiao	西善橋
Xu Shen	許慎
xuangong	旋宮
xun	塤
Xunzi (text)	荀子
Ya	雅
ya yue	雅樂
Yan Yuan	顏淵
Yan Zhang, King of Chu	舒章
yang-yin	陽-陰
Yang Zhu	楊諸
Yangzi	揚子
Yao	堯
yazheng	亞箏
Yi	舜
Yi ji	益稷
Yi'nan	沂南
Yin	殷
Yiwenzhi	藝文志
Yize (musical pitch)	夷則
yongzhong	甬鐘
You Gu	有瞽
You Lan	幽蘭
yu (musical note)	羽
yu (wind instrument)	竽
Yue	樂
Yue Ji	樂記
Yue Jing	樂經
Yunnan	雲南
Yutaishan	雨台山
Yuyang	圉陽
Yuyao	余姚
Zaolinpu	棗林鋪
Zeng (state)	曾
Zeng Hou Yi	曾侯乙
"Zeng Hou Yi zuo chi"	曾侯乙作持
"Zeng Hou Yi zuo chi yong zhong"	曾侯乙作持用終
Zhanguoce	戰國策
Zhao Hun	招魂
Zhaoxiang	趙巷
zhazheng	軋箏
Zhejiang	浙江
zheng (stringed instrument)	箏
Zheng Xuan	鄭玄
Zheng (state)	鄭
zhi (musical note)	徵
Zhong Yi	鐘義
Zhong Ziqi	鐘子期
Zhou (dynasty)	周
Zhou, King of Shang	紂王（商）
Zhou Bo	周勃
Zhou Li	周禮
Zhou Song	周頌
Zhou Yu	周語
zhu (plant)	竹
zhu (stringed instrument)	筑
zhun	準
zhuo	濁
Zigong	子貢
Zi Xia	子夏

References

JOURNALS

Acustica

Archaeology

Arts Asiatiques

Asian Art

Asian Music

Asiatische Studien/Études Asiatiques

Bulletin of the School of Oriental and African Studies

China Pictorial

Chinese Music

Dunhuang yanjiu

Early China

Gakki shiryō-shū

Galpin Society Journal

Harvard Journal of Asiatic Studies

Huangzhong

Hunan kaogu jikan

Journal of the American Oriental Society

Journal of the International Folk Music Council

Kaogu

Kaogu jinghua

Kaogu xuebao

Monumenta Nipponica

Musica Asiatica

Orientations

T'oung Pao

Tōyō ongaku kenkyū

Wenwu

Yinyue yanjiu

Zhongguo wenwu

Zhongguo wenwubao

Zhongguo wenwu jinghua

BOOKS AND ARTICLES

Analects. (See under Arthur Waley)

Bachmann, Werner. 1994. "Die skythisch-sarmatische Harfe aus Olbia: Vorbericht zur Rekonstruktion eines unveröffentlichten, im Kriege verschollenen, Musikinstruments." In *Sons originels: Préhistoire de la musique*, edited by M. Otte, 111–34. Études et recherches archéologiques de l'Université de Liège, no. 61. Liège: Université de Liège.

Bodde, Derk. 1959. "The Chinese Cosmic Magic Known as 'Watching for the Ethers.'" In *Studia Serica Bernhard Karlgren Dedicata*, edited by E. Glahn and S. Egerød. Copenhagen: Munksgaard.

Boltz, Judith M. n.d. "Northern and Southern Variations on the Song of Dynastic Legitimacy," unpublished paper.

Chen Cheng-yi [Cheng Zhenyi], ed. 1994. *Two-tone Set-bells of Marquis Yi.* Singapore: World Scientific Publishing Company.

Chen Cheng-yi [Cheng Zhenyi], Tan Weisi, Shu Zhimei, eds. 1992. *Zeng Hou Yi bianzhong yanjin.* Wuhan: Hubei renmin chubanshe.

Chen Fu-Yen. 1975. "Confucian Ceremonial Music in Taiwan with Comparative References to Its Sources." Ph.D diss., Wesleyan University.

Chen Mengjia. 1964. "Song Dasheng bianzhong kaoshi." *Wenwu* 2: 51–53.

Chinese Cultural Foundation of San Francisco. 1987. *Stories from China's Past: Han Dynasty Pictorial Tomb Reliefs and Archaeological Objects from Sichuan Province, People's Republic of China.* San Francisco: Chinese Cultural Foundation of San Francisco.

Chinese Music. 1980 (March). Woodridge, Ill.: Chinese Music Society of North America.

Chu ci buzhu. 1979. Reprint. Hong Xingzu's edition of *Chu Ci* by Qu Yuan (trad. dates 343?–ca. 315 B.C.) et al. Original edition Kyoto: Chūbun, 1964.

Confucius. *Analects.* (See under Arthur Waley).

Cook, Constance A., and John S. Major, eds. 1999. *Defining Chu: Image and Reality in Ancient China.* Honolulu: University of Hawai'i Press.

Cook, Scott. 1995. "*Yue Ji*—Record of Music: Introduction, Translation, Notes, and Commentary." *Asian Music* 26, 2: 1–96.

Crump, James I., trans. 1996. *Chan-kuo Ts'e.* Rev. ed. Ann Arbor: Center for Chinese Studies, University of Michigan.

DeWoskin, Kenneth J. 1982. *A Song for One or Two: Music and the Concept of Art in Early China.* Ann Arbor: Center for Chinese Studies, University of Michigan.

———. 1990. "Echoes of Deep Antiquity: Chinese Music Archaeology." *Asian Art* 3, 2 (spring): 19–42.

Eberhard, Wolfram. 1970. *Sternenkunde und Weltbild im alten China: Gesammelte Aufsätze.* Taibei: Chinese Materials and Research Aids Service Center.

Falkenhausen, Lothar von. 1988. "Ritual Music in Bronze Age China: An Archaeological Perspective." Ph.D diss., Harvard University.

———. 1991. "Chu Ritual Music." In *New Perspectives on Chu Culture during the Eastern Zhou Period*, edited by Thomas Lawton, 47–106. Washington, D.C.: Arthur M. Sackler Gallery, Smithsonian Institution.

———. 1992. "On the Early Development of Chinese Musical Theory: The Rise of Pitch-Standards." *Journal of the American Oriental Society* 112, 3: 433–39.

———. 1993a. "Issues in Western Zhou Studies." *Early China* 18: 139–226.

———. 1993b. *Suspended Music: The Chime-Bells of the Chinese Bronze Age.* Berkeley: University of California Press.

Falkenhausen, Lothar von, and Thomas D. Rossing. 1995. "Acoustical and Musical Studies on the Sackler Bells." In *Eastern Zhou Ritual Bronzes from the Arthur M. Sackler Collections*, edited by Jenny F. So, 431–79. Washington, D.C., and New York: Arthur M. Sackler Gallery and Harry N. Abrams.

———. 1998. "East Asian Bells after the Bronze Age." In *Proceedings of the International Conference "Chinese Archaeology Enters the Twenty-first Century,"* edited by the Department of Archaeology, Peking University, 407–31. Beijing: Kexue chubanshe.

Fang Jianjun. 1996. *Zhongguo gudai yueqi gailun.* Xi'an: Shaanxi renmin chubanshe.

Feynman, Richard P., Robert B. Leighton, and Matthew Sands. 1963. *The Feynman Lectures on Physics.* Vol. 1. Reading, Mass.: Addison-Wesley.

Fu Juyou and Chen Songchang. 1992. *Mawangdui Han mu wenwu.* Changsha: Hunan chubanshe.

Fung Yu-lan. 1952–53. *A History of Chinese Philosophy.* Translated by Derk Bodde. 2 vols. Princeton: Princeton University Press.

Goldin, Paul. Forthcoming. *Rituals of the Way: The Philosophy of Xunzi.* Ashland, Ohio: Open Court Press.

Goormaghtigh, Georges. 1990. *L'art du Qin: Deux textes d'esthétique musicale chinoise.* Brussels: Institut des Hautes Études Chinoises.

Guangxi Zhuangzu Autonomous Region Museum, ed. 1988. *Gui Xian Luobowan Han mu.* Beijing: Wenwu chubanshe.

Guangzhoushi wenwu guanli weiyuanhui and Guangdong sheng bowuguan, eds. 1991. *Xi Han Nanyue wang mu.* 2 vols. Beijing: Wenwu chubanshe.

Gulik, Robert H. van. 1951. "Brief Note on the Cheng, the Chinese Small Cither." *Tōyō ongaku kenkyū* 9: 10–25.

———. 1969a. *Hsi K'ang and His Poetical Essay on the Lute.* 1941. Reprint. Rutland, Vt., and Tokyo: Charles Tuttle and Sophia University.

———. 1969b. *The Lore of the Chinese Lute: An Essay in the Ideology of the Ch'in.* 2d rev. ed. Rutland, Vt., and Tokyo: Charles Tuttle and Sophia University.

Han Shu. Ban Gu et al., eds. 1962. 20 vols. Beijing: Zhonghua chubanshe.

Harich-Schneider, Eta. 1955. "The Earliest Sources of Chinese Music and Their Survival in Japan." *Monumenta Nipponica* 11: 195–213.

Hawkes, David, trans. 1985. *The Songs of the South.* Harmondsworth: Penguin.

Hebei sheng wenwu guanlichu. 1980. *Mancheng Han mu.* Beijing: Wenwu chubanshe.

Henderson, John. 1984. *The Development and Decline of Chinese Cosmology.* New York: Columbia University Press.

Hornbostel, Erich M. von, and Curt Sachs. 1961. "Classification of Musical Instruments." Translated by Anthony Baines and Klaus P. Wachsmann. *Galpin Society Journal* 14: 3–29.

Hsu, Cho-yün. 1965. *Ancient China in Transition.* Palo Alto: Stanford University Press.

Huainanzi. Compiled by Liu An (ca. 178–122 B.C.). *Sibu congkan* edition, Shanghai: Shangwu, 1927. Reissued Taibei: n.d.

Huang Xiangpeng. 1992. "Jun Zhong kao — Zeng Hou Yi mu wuxuanqi yanjiu." In *Zeng Hou Yi bianzhong yanjiu,* edited by Chen Cheng-yi et al., 548–86. Wuhan: Hubei renmin chubanshe.

———. 1994. "Qin Han shanghe yueqi 'zhu' de shouci faxian ji qi yiyi." *Kaogu* 8: 722–26.

———, ed. 1996. *Zhongguo yinyue wenwu daxi.* 7 vols. (by province). Zhengzhou: Daxiang Press.

Hubei sheng bowuguan, ed. 1989. *Zeng Hou Yi mu.* 2 vols. Beijing: Wenwu chubanshe.

Hulsewé, A.F.P. 1965. "Text in Tombs." *Asiatische Studien/Études Asiatiques* 18/19: 78–89.

Hunan sheng bowuguan, ed. 1973. *Changsha Mawangdui yi hao Han mu.* 2 vols. Beijing: Wenwu chubanshe.

Hung, William, Kazuo Enoki, Sugako Kimura, and Heng Mao. 1974. *Mao shih yin te (A Concordance to Shih Ching).* 1934. Reprint Taibei: Harvard-Yenching Institute Sinological Index Series, suppl. 9.

Jiang Langchan. 1988. "Zeng Hou Yi mu gu yueqi yanjiu." *Huangzhong* 4: 73–84.

Jiang Liangfu. 1985. *Chu Ci Tonggu.* 4 vols. Ji'nan: Qi Lu shushe.

Kaogu jinghua. 1993. Zhongguo shehui kexueyuan kaogu yanjiusuo, ed. Beijing: Kexue chubanshe.

Karomatov, Fajsulla M., V.A. Meškeris, and Tamara S. Vyzgo. 1987. *Mittelasien, Musikgeschichte in Bildern* 2:9. Leipzig: Deutscher Verlag für Musik.

Kaufmann, Walter. 1976. *Musical References in the Chinese Classics.* Detroit Monographs in Musicology 5. Detroit: Information Coordinators.

Kishibe, Shigeo. 1956. "A Chinese Painting of the T'ang Court Women's Orchestra." In *The Commonwealth of Music,* edited by G. Reese and R. Brandel, 104–117. New York: Free Press.

Konan-shō Hakubutsukan, Chūgoku no hakubutsukan dai nikan. 1981. Tokyo: Kodansha.

Lam, Joseph S. C. 1996. "Ritual and Politics in the Court of Ming Shizong." In *Harmony and Counterpoint: Ritual Music in Chinese Context,* edited by Bell Yung, Evelyn S. Rawski, and Rubie S. Watson, 35–53. Stanford: Stanford University Press.

Lawergren, Bo. 1990. "The Ancient Harp from Pazyryk." *Beiträge zur allgemeinen und vergleichenden Archäologie* 9/10: 111–18.

———. 1995–96. "The Spread of Harps Between the Near and Far East During the First Millennium A.D.: Evidence of Buddhist Musical Cultures on the Silk Road." *Silk Road Art and Archaeology* 4: 233–75.

———. 1997a. "To Tune a String: Dichotomies and Diffusions between the Near and Far East." In *Ultra Terminum Vagari: Scritti in onore di Carl Nylander,* edited by B. Magnusson, S. Renzetti, P. Vian, and S.J. Voicu, 175–92. Rome: Edizioni Quasar.

———. 1997b. "Harfe." In *Die Musik in Geschichte und Gegenwart.* Vol. 6, edited by Ludwig Finscher, 143–71. Kassel/Stuttgart: Bärenreiter/Metzler.

Legge, James. 1885–99. *The Sacred Books of China. The Texts of Confucianism.* 1 *Shu King* (1899); 2 *Yi King* (1899); 3–4 *Li Ki* (1885). Oxford: Clarendon Press.

———. 1899. *The Sacred Books of China.* Pt. 1: *The Shu King, Shi King, Hsiao King.* Oxford: Clarendon Press.

Lehr, André. 1987. *The Designing of Swinging Bells and Carillon Bells in the Past and Present.* Asten, The Netherlands: Athanasius Kircher Foundation.

———. 1988. "The Tuning of the Bells of Marquis Yi." *Acustica* 67: 144–48.

Li Chunyi. 1996. *Zhongguo shanggu chutu yueqi zonglun.* Beijing: Wenwu chubanshe.

Li Ji Zhushu. Edited by Ruan Yuan. In *Shisanjing zhushu.* 1981. 1: 1221–378; 2: 1379–696. Beijing: Zhonghua chubanshe.

Lindqvist, Cecilia. 1991. *China, Empire of Living Symbols.* Translated by J. Tate. Reading, Mass.: Addison-Wesley.

Liu Dongsheng and Yuan Quanyou. 1988. *Zhongguo yinyueshi tujian.* Beijing: Renmin yinyue chubanshe.

Liu Lesheng, ed. 1992. *Zhongguo yueqi tujian.* Ji'nan: Shandong.

Loewe, Michael. 1974. *Crisis and Conflict in Han China, 104 B.C. to A.D. 9.* London: George Allen and Unwin.

———. 1994. *Divination, Mythology and Monarchy in Han China.* Cambridge: Cambridge University Press.

Loewe, Michael, and Edward L. Shaughnessy, eds. 1999. *The Cambridge History of Ancient China.* Cambridge: Cambridge University Press.

Ma Chengyuan, ed. 1997. *Zhongguo qingtongqi quanji 11, Dong Zhou 5.* Beijing: Wenwu chubanshe.

Major, John S. 1978. "Research Priorities in the Study of Ch'u Religion." *History of Religions* 17, 3–4: 226–43.

———. 1984. "The Five Phases, Magic Squares, and Schematic Cosmography." In *Explorations in Early Chinese Cosmology.* Edited by Henry Rosemont Jr., 13–66. Chico, Calif.: Scholar's Press.

———. 1993. *Heaven and Earth in Early Han Thought.* Albany: SUNY Press.

Mencius. Translated by D.C. Lau. 1970. Harmondsworth: Penguin Books.

Mok, Robert T., trans. 1978. "Ancient Musical Instruments Unearthed from the Number One Han Tomb at Ma Wang Tui, Changsha" (English summary of *Changsha Mawangdui yi hao Han mu,* edited by Hunan sheng bowuguan, 2 vols., 1973. Beijing: Wenwu chubanshe; and *Kaogu* 1974, 1: 56–60.) *Asian Music* 10, 1: 39–88.

Needham, Joseph, with Wang Ling and Kenneth G. Robinson. 1962. "Sound (Acoustics)." *Science and Civilisation in China.* Vol. 4, pt. 1: 126–228. Cambridge: Cambridge University Press.

Nketia, J. H. Kwabena. 1974. *The Music of Africa.* New York: W. W. Norton and Company.

Otsu 1985. *Chūgoku Konan-shō shutsudo bunbutsu.* Otsu: Shiga-ken Kokusai Yūkō Shinzen Kyōkai.

Pian, Rulan Chao. 1967. *Song Dynasty Musical Sources and Their Interpretation.* Harvard-Yenching Institute Monograph Series, no. 16. Cambridge, Mass.: Harvard University Press.

Picard, François. 1991. *La Musique Chinoise.* Paris: Minerve.

Picken, Laurence D. 1957. "China." In *New Oxford History of Music.* Vol. 1, 83–134. London: Oxford University Press.

———. 1962. "Musical Terms in a Chinese Dictionary of the First Century." *Journal of the International Folk Music Council* 14: 40–43.

———. 1965. "Early Chinese Friction-Chordophones." *Galpin Society Journal* 18: 82–89.

———. 1969. "The Musical Implications of Line-Sharing in the Book of Songs (*Shi Ching*)." *Journal of the American Oriental Society* 89: 408–10.

———. 1977. "The Shapes of the *Shi Jing* Song Texts and Their Musical Implications." *Musica Asiatica* 1: 85–109.

———. 1981. *Music from the Tang Court.* Vol. 1. London: Oxford University Press.

Pierce, John R. 1983. *The Science of Musical Sound.* New York: Scientific American Books.

Poo, Mu-chou. 1998. *In Search of Personal Welfare: A View of Ancient Chinese Religion.* Albany: State University of New York Press.

Pratt, Keith L. 1976. "Music as a Factor in Song-Koryô Diplomatic Relations, 1069–1126." *T'oung Pao* 62: 199–218.

———. 1981. "Sung Hui Tsung's Musical Diplomacy and the Korean Response." *Bulletin of the School of Oriental and African Studies* 44: 509–21.

Price, Percival. 1983. *Bells and Man.* Oxford: Oxford University Press.

Provine, Robert C. 1996. "State Sacrificial Music and Korean Identity." In *Harmony and Counterpoint: Ritual Music in Chinese Context,* edited by Bell Yung, Evelyn S. Rawski, and Rubie S. Watson, 54–75. Stanford: Stanford University Press.

Rao Zongyi [Jao Ts'ung-i] and Zeng Xiantong [Tseng Hsien-t'ung]. 1985. *Sui Xian Zeng Hou Yi mu zhong qing mingci yanjiu.* Hong Kong: Chinese University of Hong Kong Press.

Rawski, Evelyn S. 1996. "The Creation of an Emperor in Eighteenth-Century China." In *Harmony and Counterpoint: Ritual Music in Chinese Context,* edited by Bell Yung, Evelyn S. Rawski, and Rubie S. Watson, 150–74. Stanford: Stanford University Press.

Rickett, W. Allyn. 1985–98. *Guanzi: Political, Economic, and Philosophical Essays from Early China.* 2 vols. Princeton: Princeton University Press.

Rudolph, Richard. 1948. "Dynastic Booty: An Altered Chinese Bronze." *Harvard Journal of Asiatic Studies* 11: 174–80.

———, in collaboration with Wen Yu. 1951. *Han Tomb Art of West China: A Collection of First- and Second-Century Reliefs.* Berkeley: University of California Press.

Sachs, Curt. 1977. *The History of Musical Instruments.* Reprint London: Dent. Original edition New York: Norton, 1940.

Sadie, Stanley, ed. 1980. *The New Grove Dictionary of Music and Musicians.* London: Macmillan.

Shaanxi chutu Shang Zhou qingtongqi. 1980. Edited by Shaanxi sheng kaogu yanjiusuo et al. Vol. 2. Beijing: Wenwu chubanshe.

Shi Ji. Sima Qian (ca. 145–90 B.C.) et al. 1959 edition. Beijing: Zhonghua chubanshe.

So, Jenny F. 1994. "Bells of Bronze Age China." *Archaeology* (January/February): 42–51.

———. 1995. *Eastern Zhou Ritual Bronzes from the Arthur M. Sackler Collections.* Washington, D.C., and New York: Arthur M. Sackler Gallery and Harry N. Abrams.

———. 1997. "Red and Black on Some Early Chinese Lacquers." *Orientations* (October): 60–66.

So, Jenny F., and Emma C. Bunker. 1995. *Traders and Raiders on China's Northern Frontier.* Washington, D.C.: Arthur M. Sackler Gallery, Smithsonian Institution, in association with the University of Washington Press.

Spiro, Audrey. 1990. *Contemplating the Ancients: Aesthetic and Social Issues in Early Chinese Portraiture.* Berkeley: University of California Press.

Takigawa Kametorō. 1932–34. *Shiki kaichū kōshō.* 10 vols. Tokyo: Tōhō Bunka Gakuin Tōkyō Kenkyūjo.

Tan Weisi, ed. 1992. *Zeng Hou Yi mu wenwu yishu.* Wuhan: Hubei meishu chubanshe.

Thote, Alain. 1987. "Une Sculpture chinoise en bronze." *Arts Asiatiques* 42: 45–58.

Tong, Kin-woon. 1982–84. "Shang Musical Instruments." Parts 1–3. *Asian Music* 14, 2: 17–82; 15, 1: 103–84; 15, 2: 67–143.

Waley, Arthur. 1937. *The Book of Songs.* London: George Allen and Unwin.

———. 1938. *The Analects of Confucius.* London: George Allen and Unwin.

Wang, Ching Hsien. 1974. *The Bell and the Drum: Shih Ching as Formulaic Poetry in an Oral Tradition.* Berkeley and Los Angeles: University of California Press.

Wenhua Dageming qijian chutu wenwu. 1972. Vol. 1. Beijing: Wenwu chubanshe.

Wu Zhao. 1981. "Chi di bian." *Yinyue yanjiu* 1: 8ff.

Xue Zongming. 1981. *Zhongguo yinyueshi, yuepu pian.* Taibei: Shangwu yinshuguan.

Yung, Bell. 1998. *Gems of Ancient Chinese Zithers.* Hong Kong: University Museum and Art Gallery, Hong Kong University.

Yung, Bell, Evelyn S. Rawski, and Rubie S. Watson, eds. 1996. *Harmony and Counterpoint: Ritual Music in Chinese Context.* Stanford: Stanford University Press.

Zheng Ruzhong. 1988. "Dunhuang bihua yueqi fenlei kaolüe." *Dunhuang yanjiu* 4: 10–25.

Zhongguo wenwu jinghua. 1997. Beijing: Wenwu chubanshe.

Zhou Li Zhengyi. Edited by Zheng Xuan (A.D. 127–200). *Sibu beiyao* edition. Shanghai: Zhonghua chubanshe, 1927.

Zhou Qingbao. 1994. *Sichuan zi lu yishu yanjiu.* Urumqi: Xinjiang renmin chubanshe.

Ziboshi bowuguan and Qi Gucheng bowuguan, eds. 1997. *Linzi Shang Wang mudi.* Ji'nan: Qi Lu shushe.

Contributors

ROBERT BAGLEY is professor in the department of art and archaeology, Princeton University. He is author of *Shang Ritual Bronzes in the Arthur M. Sackler Collections* (The Arthur M. Sackler Foundation, 1987) and editor of *Art of the Houma Foundry* (Princeton University Press, 1996).

LOTHAR VON FALKENHAUSEN is professor in the department of art history at the University of California, Los Angeles (UCLA), where he is also on the faculty of the Institute of Archaeology. Trained as an archaeologist (with a Ph.D. in anthropology from Harvard University), he is interested in topics of interdisciplinary importance. As an outgrowth of a long-standing research interest in ancient Chinese ritual and its paraphernalia, he has published widely on ancient Chinese bells and the reconstruction of musical theory from excavated evidence, the most comprehensive study being *Suspended Music: The Chime-Bells of the Chinese Bronze Age* (University of California Press, 1993). He has also published on ritual bronzes and their inscriptions, on the history of archaeology and its significance in contemporary China, and other topics. He currently serves as co-principal investigator on the joint UCLA–Peking University archaeological project on ancient salt production in the Sichuan area.

FENG GUANGSHENG is vice-director of the Hubei Provincial Museum, a musicologist, and the musical director of the Chinese Bells Ensemble, which has performed widely in the United States and Europe. His ensemble most recently participated in the performance of Tan Dun's *Symphony 1997* at Lincoln Center, New York City, with cellist Yo-Yo Ma. He was a member of the archaeological team that excavated Tomb 2 in Suizhou, which contained the chime of thirty-six bronze bells featured in the exhibition at the Arthur M. Sackler Gallery. He is also the author of many articles in Chinese on the musicology and musical instruments from the two Zeng tombs at Suizhou.

BO LAWERGREN is professor of physics at Hunter College at the City University of New York. He researches music archaeology of regions from the Mediterranean to East Asia and has published the results in numerous scholarly journals and encyclopedias such as *The New Grove Dictionary of Music and Musicians* (Macmillan, 1980) and *Die Musik in Geschichte und Gegenwart* (Bärenreiter/Metzler, 1997).

JOHN S. MAJOR received his Ph.D. in history and East Asian languages from Harvard University. He taught East Asian history at Dartmouth College from 1971 to 1984 and later served as director of the China Council of the Asia Society. He is the author of *Heaven and Earth in Early Han Thought* (SUNY Press, 1993) and coeditor with Constance A. Cook of *Defining Chu: Image and Reality in Ancient China* (University of Hawai'i Press, 1999). Dr. Major is also the author of numerous articles and reviews in the field of early Chinese intellectual history. He is currently an independent scholar and editor based in New York.

JENNY F. SO is curator of ancient Chinese art at the Freer Gallery of Art and Arthur M. Sackler Gallery, Smithsonian Institution, and organizer of the exhibition *Music in the Age of Confucius.* She received her Ph.D. in art history from Harvard University and has participated as organizer or author for archaeological exhibitions at the Metropolitan Museum of Art (1980) and the Solomon R. Guggenheim Museum (1998) in New York City, as well as the Miho Museum (1997) in Kyoto, Japan. She is author of *Eastern Zhou Ritual Bronzes from the Arthur M. Sackler Collections* (Arthur M. Sackler Gallery and Harry N. Abrams, 1995) and coauthor with Emma C. Bunker of *Traders and Raiders on China's Northern Frontier* (University of Washington Press, 1995), as well as numerous articles on the art of ancient China.

Index

Note: Numbers in italics refer to captions.

acoustics: of almond-shaped bells, 38–42, 45, 48; of circular bells, 48
ancestor veneration, 25, 52

Baihuatan: ritual wine vessel (*hu*) from, 20, *20*
bamboo: tacks, 126; transverse flutes, 133; used in mouth organs, 96, 98; used in panpipes, 94
Beethoven, Ludwig von, 48, 52
Beizhai: tomb relief, *73*
bells, 36–42, *37*, *42–44*, 120–23; casting, 42–46, 51–52; chimes, 71, 73; Chu king's, 36, *37*, 38, 40, *40*, 123; clapper, 46; conversion from signaling to musical instruments, 46–52; history of, 46–47; inscriptions, 36, 38–42, *40*, *43*, *44*, 54, 56–62; musical scales played by, 52–56, 108–9; placement in tomb 2, *17*; playing of, 46; shape and sound of, 38–42, *44*, 45–46, 48; in Song dynasty, 104; stand for, *15*, 36, *37*, *39*, 40; stemmed, 46–47, *47*, 121; surface decoration, 121–22; and tuning, 42–46; tuning system compared to *se*, 69–73, *74*; Western, 36, 48; in Western Zhou, 107; and zithers, 72–73
Bo Ya, 31, *31*
bridges, *see* tuning methods
Bronze Age: information on music of, 13–14, 101; instruments (ocarina), 106; *qin*, 65, *68*

carillons, 36
carpentry techniques: inspiring bronze assembly, 137; used in *se*-zithers, 68
chamber ensemble, 21–22, 27–28
Changsha: first extant *se*, 67; mouth organ, 97. *See also* Mawangdui
Changtaiguan, 27, *27*; *se*-zither, 68
Cheng Lian, 31
chime stone rack, *15*, *53*, 54–55, *55*, 125
chime stones, 18, 53–56, *54–55*, 125: boxes for, 54–55, *55*, 57, 125; melodies, 109
chromatic scale in China 49–50
Chu, state of, 17; ancestor veneration in, 25; and barbarism, 27; decorative style, 21; iconography, 22, 119; mouth organs in, 96–98; musical culture of, 52; *qin* in, 31–32, 74, 77, 79; *se* in, 79; and shamanism, 27
Chu Ci (Elegies of Chu), 19–20, 31–32; cuisine mentioned in, 128; zithers mentioned in, 77
"Chu Silk Manuscript," 119
coffins: of Marquis Yi of Zeng, 14, *15*, *16*, 118–19; decoration, 27, 79; in Mawangdui Tomb 1, *zhu*, 67
Confucian ritual music in Taiwan, 104
Confucian ritual performances, *102*
Confucius and Confucian tradition: bells and, 62; on musical techniques, 73; music and rites of a ruler, 23–24; and panpipes, 94; and the *qin*, 30–32; theory of music, 24–25; ritual music, *102*, 104–5
cosmology, music's role in, 29–30, 109, 111
court ensemble, 18–20

Dingjiayaodian: tile relief showing *se*-zither, *73*
drums, *15*, 126; base, 126; flat 127, 136
duck-shaped box, 20, *21*, 128; scenes painted on, *27*
Duke Huan of Qi, 24, 98
Duke Wen of Wei, 25, 28

"Eight Sonorous Substances," 106–7
E'mei Xian, *73*
equestrian ensembles, 94–95
Er Ya, 97

Fenshuiling: tuning pegs, 77, *79*
flutes, transverse (*chi*), 91–92, 133
folk music and dance: exotic and indigenous elements, 102; relation to ritual music and

musical entertainment, 102, 109; Soviet style, influence of, 104
Fufeng Qijiacun, 52, *52*
funerary figures, 18, *19*
funerary instruments, 97

gagaku, 109
gamelan, 109
ganying theory of resonance, 29
garment box, wooden, 22, *22*
Green Dragon of the East, 118
Guan Zhong, 24
Guanzi, 24, 26
Guo Pu, 97

Han dynasty, 22, 26, 29, 31–32; dictionary, 79; Eastern Han period, 95; musical tastes in, 103; panpipes in, 94–95; pitch standards, 112; *qin* in, 65, 77, 79; *se*-zither in, 73, 77; tuning keys, 77; *zhu* in, 65
Han Fei, 98
Han Shu, 95
harps, 75, 102
hedonism, 26
heterophony, 73
human figures: dancers, 27, 128; drummer, 128; funerary, 18, *19*; musicians, 27–28, 93; shamans, 27

imperial era, China, 102; preoccupation with exact tuning, 108
inscriptions, 53, *54*; confirming tomb occupant, 17; for display, 56; on drum base, 126; on fantastic bird, 137; as key to musical scales, 53, 56; as tone-defining, 56–62, 58, *60*, 107–8, 111–12, 125

Ji Kang, *77*, 79
Jincun: tuning key from, *79*
Jiu Tang Shu, 79
jun, 73, 79

Kepler, Johannes, 29, 61
Korea: Confucian ritual music in, 104–5, *106*; modern performance of traditional ritual music in, 109
Kucha, Xinjiang Province, 95

Li Ji, 23, 31, 110
Lijiashan, 96, 98
Linzi, 75; *qin* tuning key, *79*
Liuchengqiao, 68; *se*-zither, 68, 73
"Lonely Orchid" (*You Lan*), 31–32
Lunar Lodges (constellations), 22, *22*
lutes, 75, 102; in Mesopotamia, 75

mallets, 39, *41*, 53, 54, 124–25
maps: for afterlife, 119; zither distribution from archaeological contexts, 67; of sites, cities, and ancient states, 114
Marquis Yi of Zeng: musical preferences of, 28–29. *See also* tomb of
mathematics and music, 61
Mawangdui, 18; detail showing *zhu*, *67*; instrument strings, 75; mouth organs, 97–98; *qin*, 74, *77*; *se*, 73, *73*; silk documents, 118–19; tuning peg, 75, *77*
military music (*gu chui*), 94–95
modern performances, 37, *41*, 104–5, 108–9
Mogao Caves, wall paintings portraying panpipes in, 95
motifs: animal, *79*, 121; birds and snakes, 22, 68, 77, 79, 118–19, 129; dragons, 121, 126; eyelike, 68; foreign influences on, 77; geometric, 68, 129; human/animal, 77, 79, *79*, 118–19, 122, 128; predator-victim relationships, 77
mounting positions, of bells, 51
mouth organ (*sheng*), 95–98; from Yunnan, *96–97*, 131
music, ancient, 19–20; and good government, 23–25; in late Bronze Age thought and society, 23–30; oldest *qin* tune, 31; theory of, 24–25, 29, 111–12; and vice, 25–26
musical notation and theory, 110–12
musical scales, 52–56

Nanyue Wang, 75, 77, *79*
nao, *49–50*
Neolithic Period: music in, 101, 106–7
Ningxiang, 47, *47*, *49–50*
numerology and music, 29, 61

ocarinas, 106

panpipes (*xiao/paixiao*), 92–95; melodies, 109; stone, 92, 93; thirteen-pipe, 93, 132
pentatonic scale, 53–54, 108-9; anhemitonic, 53–56
performers/players of musical instruments: of bells, 37, *41*; and bell strike points, 51; of chime stones, 55–56, 125; conventions, 110; in Han dynasty pictorial reliefs, 99 n10; modern, 37, *41*, 104–5, 108–9; of panpipes, 94; of *se*-zither, 129; of war dance, 119; of *se*, 69–70
Persia, relief depicting bell, 36, *38*, 46
philosophy: complimentary pairing concept, 22, 118; music and, 23–30, 61, 107
pitch: measurement of, 52–53; in Neolithic period, 107; and numerology, 61; on chime stone inscriptions, 125; standards of state of Chu, 58–61, *59*, 111–12; standards of state of Zeng, 57–61, *59*, 111–12

qin (zither), 21–22, 65, *70*, 73–79; ancient and classical, 74–75, *79*, 134; Confucius and, 30–32; five-stringed, 135; oldest tune for, 31–32; origin of, 31, 77, 79, 102; ten-stringed, 134; types of, *77*
Qing: bell chimes, casting of, 108; dynasty, *102*; cylindrical bells in, 104; musical notation in, 110

ritual music: ceremonial music, 24–25, 32, 73, 128; melody, tempo, rhythm, 108–9; reforms of in various dynasties, 104; representation of, 128; timbre and tuning, 105–8;

scales, musical, 52–56; and numerology, 61; pentatonic, 53–56, 108–9; structure of *se*'s, 71, *74*
se (zither), 21–22, 65, 67–73, *68–69*; Confucius and, 31; decoration related to rank of owner, 68–69; in literature, 31; strings and moveable bridges, 70–71; tuning system compared to sixty-five bells, 69–70, *74*; twenty-five stringed, *73*, 129; twenty-five stringed, with wooden bridges, 130
shamanism, 26–27; and coffin decoration, 118; and motifs on *se*-zithers, 68
Shang dynasty, 25–26, 94; mouth organ origin in, 96; panpipes, 92
Shao music, 94, *110*
Shi Jing (Classic of poetry), 19, 30, 31–32; descriptions of instruments, 106–7; modern performances based on, 109; panpipes in, 92–93; representations of court music in, 102; *se* and *qin* mentions in, 77
Shōsōin, Nara, 94
silk: documents, 118; instrument strings, 75
singing, 56–58
Song dynasty: bronze bell, Northern Song, *105*; panpipes in, 95; ritual music, 104–5, 108
stringed instruments, Chinese: general characteristics of, 67
stringed instruments, Western: sound holes, 67; tuning pegs compared to Chinese, 67

Tang dynasty, 22, 32; modern performances of music of, 109; musical notation, 110; panpipes, 94–95; ritual court music, 104
terra-cotta: reliefs, 73, *73*; scene of musical ensemble, *103*
tomb of Marquis Yi of Zeng (Zeng Hou Yi): aerial view of, *14*, *15*; bell display from, *57*; dating of, 17; discovery, 14–18
Tomb 2: discovery and contents of, 17–18; view of, *17*; group of thirty-six bells, *57*
touhu (ritual game), 110, *111*
tuning, importance of, historically, 107–8
tuning methods; bridges and pegs, 67, 69, 73; *jun*, for bells, 73; keys, 75, 77; pegs on *qin*, 67, *79*; pegs for stringed instruments, 75; *qin*, 22, 31, 73, 75, *79*; *se*-zither, 67, 69, *69*, 129; types of, 66
tuning systems, comparison of for *se* and bells, *74*

wall paintings: evidence of panpipes in, 95
Wangchengpo: *zhu*, 79
Warring States Period, 25, 29; bells in, 108; folk music in, 102; musical entertainment in, 103; tuning keys, 77
Western bells. *See* bells.
White Tiger of the West, 118
Wulipai: *qin* from Tomb 3, *77*
wuxing (Five Phases), 29
Wuyingshan, *103*

Xiangtan, bell from, *51*
Xiasi, *92*, *93*
Xin'gan, bell from, *47*
Xishanqiao, Nanjing, *77*
Xunzi, 24; the philosopher, 24, 119

Yangzi River Valley, 17–18; bell manufacture in, 46–47; bells found in, 47; Erlitou, Henan Province, 46, *46*
yazheng, 80
yongzhong bell, *51*, 52, *52*
Yue Ji, 23, 25, 29, 30
Yue Jing (Classic of music), 13
Yutaishan, 97, 99 n19

Zaghunlug, 75
Zaolinpu, 97, 99 n10
Zeng Hou Yi, *see* Marquis Yi of Zeng
Zeng state: philosophy in, 22; relations with Chu state, 36
Zhanguoce, 80
Zhaoxiang, 96
zhazheng, 80
zheng (zither), 65, 80–83, *83*
Zhong Ziqi, 31, *31*
Zhou dynasty, 19, 26: bell music in, 51–52; cuisine, 128; Eastern Zhou period, 104, 109, 112; late Western Zhou, *52*; musical genres in, 101–03; panpipes music in, 94; revivals of music of, 104; ritual music in, 24–25, 32, 51–52, 73, 101–02, 128; wars of the late Zhou period and bell casting, 61; Western Zhou music, 107
Zhou Song, 92–93
zhu (zither), 21, 65, 79–80, *80*, 135

The authors

Jenny F. So is curator of ancient Chinese art at the Freer Gallery of Art and Arthur M. Sackler Gallery, Smithsonian Institution, and organizer of the exhibition *Music in the Age of Confucius.* She received her Ph.D. in art history from Harvard University and has participated as organizer or author for archaeological exhibitions at the Metropolitan Museum of Art (1980) and the Solomon R. Guggenheim Museum (1998) in New York City, as well as the Miho Museum (1997) in Kyoto, Japan. She is author of *Eastern Zhou Ritual Bronzes from the Arthur M. Sackler Collections* (Arthur M. Sackler Gallery and Harry N. Abrams, 1995) and coauthor with Emma C. Bunker of *Traders and Raiders on China's Northern Frontier* (University of Washington Press, 1995), as well as numerous articles on wide-ranging topics in the art of ancient China.

Contributing authors are Robert Bagley, professor in the department of art and archaeology, Princeton University; Lothar von Falkenhausen, professor in the department of art history at the University of California, Los Angeles; Feng Guangsheng, vice-director of the Hubei Provincial Museum and a musicologist; Bo Lawergren, professor of physics at Hunter College at the City University of New York; and John S. Major, an independent scholar and editor based in New York. ≈

SMITHSONIAN INSTITUTION LIBRARIES
3 9088 01668 0316